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CHAPTER I

THE ORIGINS OF THE UNITED STATES ENERGY PROBLEM

The American experience reflects a persistent and relentless growth in demand for energy as a result of abundant and cheap supplies, rapid industrialization, new technologies, a growing population and spreading affluence. Since the industrial revolution, cheap energy has increasingly replaced human labor, and led to spectacular growth in productivity, accumulation of national wealth, and higher standards of living for millions of Americans. The real contributions to American society of abundant and cheap energy cannot be over-emphasized.

The Nation's stock of capital goods--from poorly insulated buildings to unnecessarily large and powerful automobiles--has been tailored to plentiful and cheap energy. But the days of abundance are now drawing to a close, and American society faces sobering new energy realities. Old sources of energy are diminishing, new sources are expensive, and, as a result, cheap energy is rapidly disappearing. Fundamental changes in the supply and cost of energy, perhaps far more than any other factor, will shape the United States and the world for the remainder of this century.

The United States has already experienced two major historical transitions in its use of energy. (See figure I-1.) After the Civil War, wood, waterwheels, and windmills largely gave way to coal, which became the dominant fuel for railroad transportation, industrial process heat, and home heating. Coal supplied more than half the Nation's energy needs from about 1885 to about 1940. As mass produced automobiles became the dominant mode of transporation and as the diesel engine replaced the steam locomotive, coal was superseded by oil in the transportation sector. Because of their environmental superiority and ease of handling, oil and gas replaced coal for home heating, and to a large extent in industry.

Oil was developed originally as a source of artificial light and as a lubricant. In the 1870's and 1880's, illumination from new forms of gas manufactured from coal began to appear, and Edison invented the incandescent light. The principal use of oil became industrial and residential heat.

In the early years of this century, the age of automobiles--and the age of oil--really began. Mass production started in 1903. By 1908, auto sales were nearly 200,000. By 1940, 100 million cars were on the road. American oil production

rose from 64 million barrels in 1900 to 1.4 billion barrels in 1940. By 1950, oil had replaced coal as the predominant energy source in the United States.

Demand for natural gas followed a similar course. Gas was originally a discarded by-product of oil extraction, but its consumption grew with the development of pipeline systems that could deliver it cheaply to nationwide markets. Between 1945 and 1960, gas became the predominant fuel for residential heating, and began to replace oil and coal as a boiler fuel for both industry and electric utilities. Its cleanness and extremely low price induced both industrial and residential users to switch from coal and become heavily dependent on natural gas. Today, natural gas meets about one-fourth of United States energy needs.

Decreasing energy prices and general affluence in the United States after World War II increased demand for both oil and gas. The real cost of energy in this country decreased by 12 percent from 1950 to 1970 (see figure I-2), while the gross national product grew an unprecedented 100 percent. Automobile weight and horsepower increased; industry substituted cheap energy for increasingly expensive labor;

and new energy-intensive appliances, such as air conditioners, became commonplace. Homes, offices, and factories generally were constructed with little or no insulation or regard for energy-saving design. Cheap automobile transportation helped to shape major metropolitan areas with widely distributed suburban development and inadequate mass transit. Wider use of electricity, which delivers only one unit of energy output for every three units of energy input, resulted in generally less efficient use of oil, gas, and coal. Petroleum-based plastics and textiles replaced many natural fibers, wood, and other materials. During the entire post-war period--until 1973--almost all economic and technological developments were premised on cheap energy, while the costs of all other elements of production increased; and Americans in homes, farms, factories, and offices throughout the Nation turned to energy-saving machines and appliances for liberation from daily drudgery.

Today, America consumes far more energy than any other nation. With less than 6 percent of the world's population, the United States consumes more than 33 percent of the world's energy. As figure I-3 shows, the United States uses

more energy per dollar of gross national product than any other industrialized nation. America consumes twice as much energy per capita as West Germany, a nation with a standard of living similar to our own.

America's rapidly growing demand for energy has not resulted entirely from broad economic and social developments. Government authorized rate structures have also promoted energy use and energy waste. Large volume consumers of electricity and natural gas have been given discounts. Recent Government policy has subsidized and protected energy inefficient truck and air transportation, but not efficient railroad transport. The interstate highway system has encouraged automobile use. Local highways have drawn people, business and industry out of central cities into suburbia. Tax benefits to producers and regulation of prices to consumers have kept the price of energy below its true replacement cost. The result is that the American people have been led to believe that the energy they consume is and ought to remain cheap, when in fact it already is expensive at the margin and inevitably will become more so.

The two energy transitions of the past occurred in very special circumstances. The transition from wood to coal did not result from any decline in the availability of wood. Rather, that transition was triggered by technological developments which made it feasible and desirable to use coal. Similarly, the transition from coal to oil and natural gas resulted from technological developments rather than from any decline in the availability of coal. Indeed, even today, the Nation's coal reserves are vast.

America now faces a third major energy transition, but one resulting from an excess of demand over available energy supply, and not from technological progress. On the demand side, the Nation will have to adopt patterns of consumption that are lesa energy-intensive. On the supply side, the transition in the short term will be primarily from oil and natural gas--fuels that are versatile, easy to handle, and relatively clean--to coal--a fuel that is limited in applicability, difficult to extract and handle, and dirty. In the long term, the transition will be to solar and other alternative sources of energy.

Natural gas and oil will become increasingly scarce. Because gas in its natural state can be transported

economically only through pipelines, America's potential sources of supply are limited to North America, except for expensive imports of liquified natural gas and synthetic gas. Oil, which can be economically transported in ships as well as pipelines, is a commodity produced in many countries and consumed everywhere. Since 1940, worldwide demand for oil has increased 6.6 percent per year; and, though future growth rates may be lower, demand will continue to increase due to worldwide economic progress.

World crude oil production will reach its peak during the late 1980's or 1990's and decline thereafter. An annual 5 percent growth in demand would exhaust projected global resources during this century. Even a 3 percent annual growth rate would exhaust the world's oil supply by 2020. At present consumption rates, natural gas would disappear at present consumption rates long before then. Geologists and other experts can debate about the exact estimates, but the fundamental fact is clear: the world's supply of oil and gas, created over hundreds of millions of years, will have been consumed within about one century. Oil will not be physically exhausted; additional supply can be obtained by increasingly expensive production methods. But the

United States and the world are approaching a point at which oil will become too expensive to use as a fuel.

There is no technological "quick fix" for the energy problem. Technological progress will permit the tapping of abundant new resources, such as solar energy, geothermal energy, and fusion, but even under the most optimistic projections, those resources will not become major suppliers of energy until after the year 2000. America can land a man on the moon in a decade, but replacing oil and natural gas is a far more difficult and time-consuming job, that must be accomplished within economic, social, health, and environmental constraints.

The energy crisis that now faces America is the growing gap between its historically increasing energy demand and an overall supply that will grow more slowly for the rest of this century and until new resources can become major contributors. In particular the Nation faces a widening gap between its growing demand for oil and natural gas and domestic supplies, which will decrease or, at best, remain stable for a few years and then decline. To meet the energy crisis, then, America must make a new kind of energy transition--from a period of abundant and cheap energy to a period of increasingly scarce and expensive energy.

CHAPTER II

THE CONTINUING CRISIS

Another sudden quadrupling of the price of oil, like that in 1973-74, is unlikely. Another oil embargo now appears remote. The chance of another winter as cold as the last is less than 1 in 100. The spring rains may enable the West to avert a major electricity shortage this summer.

In the absence of energy traumas, it has been easy to forget. But the real energy crisis does not lie in intermittent embargoes or abnormally cold winters. These are simply dramatic manifestations of the hard realities of energy demand and supply that are worsening slowly but surely, day by day. This invisible crisis is sapping the world's economy and undermining the relationships among nations.

UNITED STATES ENERGY DEMAND

Assuming a high rate of economic growth, the best current projections of supply, and no new conservation or supply initiatives, United States energy demand is projected to grow from 1976 to 1985 at an average annual rate of 2.9 percent, rising from an equivalent of 37 million barrels of oil per day in 1976 to over 48 million barrels by 1985, a 33 percent increase in demand. Domestic supply, on the other hand, will increase from 30 million barrels

of oil equivalent per day in 1976 to 36 million barrels in 1985. This difference between demand and supply will be made up largely by oil imports, which will increase from 7.2 million barrels per day in 1976 to 12 million barrels by 1985. (See Figure 2-1.)

United States energy demand is different in each major part of the economy. It is composed of three sectors--residential and commercial (currently 35 percent of total demand), transportation (26 percent) and industrial (39 percent). (Chart to be inserted.) Growth rates vary substantially among the sectors. For example, from 1950 to 1975, when total energy consumption grew at an average annual rate of 3.0 percent, industrial consumption grew at a rate of only 1.9 percent, while the residential and commercial and the transportation sectors grew at a rate of 3.1 percent.

Between 1975 and 1985 residential demand is projected to grow at an average annual rate of 2.2 percent; commercial demand .5 percent; transportation demand, 1.5 percent, even with implementation of the statutory automotive fuel efficiency standards; and industrial demand, 4.7 percent.

These trends are not consistent with recent history. During the early 1970's, industrial use of energy increased only slightly, while transportation and residential and commercial use increased more than the average rate. Since the embargo, energy use by industry has actually decreased, and the energy use in transportation has increased only slightly.

The industrial and transportation sectors provide the largest opportunities for improvement in energy efficiency. Industry accounts for 39 percent of total energy demand, and has the greatest flexibilty in choosing among fuels. The transportation sector is wasteful, and thus presents large opportunities for conservation--on the order of 50 percent while providing substantially the same transportation service. Even if total demand growth were reduced substantially, residential and commercial energy consumption would continue to rise because of the increasing use of electricity.

In looking at the make-up of total energy demand, it is important to recognize that fuels have different values for different purposes. Gas is a premium fuel for home use because it is efficient in conversion to heat, is clean and emission-free, and requires no handling. Oil is currently indispensable for transportation. Coal is less versatile than oil or gas, but can be used by power plants and factories. Nuclear power, usable only for electricity generation, is the least versatile energy source.

THE SUPPLY OF OIL AND NATURAL GAS

In the United States, oil and natural gas meet 75 percent

of energy demand, but together make up only 7.7 percent of energy reserves. Natural gas is the fuel in shortest supply, relative to demand. In 1973 it furnished 37 percent of United States energy, an equivalent of about 11 million barrels of oil per day. By 1976 it had dropped to 27 percent. Domestic production of gas, having peaked at 22 trillion cubic feet in 1972, has been declining. Last year, only 20 trillion cubic feet were produced. (See figure II-2.) Gas consumption grew by about 6.5 percent per year between 1960 and 1970. From 1970 to 1974, however, the annual growth rate dropped to 1.4 percent mainly because declining production caused prohibitions on its use in new homes and buildings, and because industrial and electric utility users of interstate natural gas could not obtain adequate long-term commitments for new supplies.

Federal regulation of the wellhead price of natural gas has encouraged consumption of this premium fuel and has distorted its availability in producing and non-producing regions. Because natural gas is the cheapest domestic fuel, as well as the cleanest and easiest to handle, demand is much greater than supply. But last year, natural gas in the

interstate market sold to consumers at a price only 25 percent of the BTU equivalent price of residual fuel oil. At that price, it is highly attractive to industry and utilities. In 1976, industry and utilities burned 6 trillion cubic feet of natural gas, while new households had to turn to electricity.

Since Federal regulation covers only the interstate market, new gas production has gone primarily to the unregulated intrastate markets, where it has received higher prices. From 1973 to 1976, only 19 percent of new gas production entered the interstate market.

Natural gas accounts for only 40 percent of the Nation's total energy reserves. By 1985, gas from existing reservoirs will provide only 45 percent of natural gas demand. It is doubtful that even substantial price increases could do much more than arrest the alarming decline in gas production from existing reserves. The gap between demand and supply in the lower 48 States will have to be filled from new sources, such as Alaska; the Outer Continental Shelf; deeper, tighter onshore formations; synthetic natural gas (SNG); imported liquified natural gas (LNG); and the geopressured zones along the Gulf Coast.

The prospects for oil, the Nation's major energy source, are also not encouraging. In this century, United States consumption of oil grew at an average annual rate of 7.3 percent until 1973, when OPEC's fourfold increase in oil prices created an immediate incentive for conservation. Demand fell during the 1973-1975 recession, but has now resumed its upward trend. It grew 6.9 percent in 1976.

Domestic production, however, continues to decline from its 1969 peak of 10 million barrels per day and has reached a current level of 8 million barrels per day. (See figure II-3.) Since many oil reservoirs are nearly depleted, oil production onshore in the lower 48 States is projected to decline from the current 8 million barrels per day to about 6.3 million by 1985 and 4.6 million by 1990. This decline can be offset only by large additions to production as a result of future oil development in Alaska or on the Outer Continental Shelf, or through tertiary recovery from existing reservoirs.

Major additions to supply are unlikely. For more than 35 years, domestic oil discoveries have been out-paced by domestic consumption. In 1940, United States reserves in fields that had been discovered, defined, and measured

were sufficient for 16 years of consumption; since then, United States reserves have declined steadily (except for the discovery of Alaskan oil) to the point where they now amount to less than 10 years of consumption at the current level.

In the face of falling domestic oil discovery and production, oil companies have engaged in high risk, high cost development in such inaccessible places as Alaska and the Outer Continental Shelf, and the United States has turned increasingly to imported oil. (See figure II-4.) Imports increased from 21 percent of United States oil consumption in 1965 to 39 percent in 1974. Today, the United States imports about 9 million barrels of oil per day, or about 44 percent of its oil supplies. Increasing consumption of imported oil has led to increasing dependence on the world oil market and increasing vulnerability to the OPEC cartel which controls that market.

Currently, the industrialized world imports about 29 million barrels of OPEC oil per day. If a modest growth rate of 4 percent per year continued until 1985, OPEC production would have to rise to between 38 and 42 million barrels per day. The United States alone, the

most profligate of the world's energy users, would require about 25 percent of that total. This level of OPEC production would be unattainable unless Saudi Arabia increased its oil production from the current 8.8 million barrels per day to 20 million. Even if Saudia Arabia were to increase its production to that extent, the highest levels for OPEC production probably would be inadequate to meet increasing world demand beyond the late 1980's or 1990's.

After world oil production peaks, the industrialized western nations could be competing with each other for increasingly limited oil supplies. If United States imports were to rise to 12 million barrels per day, the United States and all western nations could face significant pressures on the price of an increasingly scarce commodity. In the late 1980's the communist countries will also experience a peak in oil production, and their demand will aggravate the growing pressure on world oil supply.

There is a limit on total world oil resources as well as on production. The most optimistic geological estimate of total recoverable world oil resources, past and present, is

about 2 trillion barrels. More than 360 billion barrels have already been consumed. Current proven crude reserves are 600 billion barrels. World demand for oil has grown at an average rate of 6.6 percent since 1940. It grew by as much as 8 percent annually during the 1960's. Even if it were assumed that demand would grow at an annual rate of only 3 percent, the world would use all its estimated recoverable oil resources before 2020. At a growth rate of 4 percent, world oil resources would be depleted by the beginning of the 21st century.

Of course, actual physical exhaustion of oil resources will not occur. Even today, over half the oil in existing wells is left in the ground because additional recovery would be too expensive. As oil production by normal methods declines and oil becomes more scarce, its price will rise and more expensive recovery methods and novel technologies will be used to produce additional oil. As this process continues, however, the price of oil will become prohibitive for most energy uses. The nations of the world will find alternatives for oil as an energy source, and oil will be saved for petrochemical and other processes in which it has maximum value.

The world's oil resources cannot be estimated with total confidence. Indeed, there is a variety of opinions among experts. But the major conclusion is indisputable: the current rate of growth of demand cannot be satisfied for more than another 10 to 20 years. Even the discovery of another Saudia Arabia, the largest proven reserve in the world, would add to proven reserves only another 6 years of supply at the world consumption rate prevailing in 1976. Another Iran would add only 4 years. Moreover, there is no reason to think that discoveries of such magnitude will, in fact, be made. Indeed, recent experience suggests that future discoveries will be relatively small or moderate in size, in inaccessible areas, and will involve very high cost--as the North Sea and Alaska illustrate.

IMPLICATIONS FOR THE UNITED STATES

For the United States, the implications of the current rate of demand growth in the face of dwindling oil and gas resources and high levels of imports are serious. The Nation would be forced to increase imports or production, or both. These courses of action present problems in the short run. But short-term impacts

would be eclipsed by even more serious problems if United States demand is still growing at the time OPEC production levels off.

Energy prices ripple out through the United States economy and affect the prices of all goods and services. Half of the 12 percent inflation rate in 1975 resulted directly or indirectly from energy price increases. Since the quadrupling of oil prices in 1973, however, world energy prices have merely kept pace with world inflation.

The Nation's high level of imports has turned a trade surplus of _____ billion dollars in 19___ into a trade deficit of ____ billion dollars in 19____. From 1971, oil imports were $3.7 billion; in 1976, they were $36.4 billion. From 1973 to 1985, total United States payments for oil could be in the range of $550 billion dollars. This outflow of money would be the largest in the Nation's history.

Supply disruptions this winter caused short-term unemployment of over one million workers nationally. They have also encouraged many firms to consider relocating plants (and jobs) in the sun belt to assure stable supplies of energy.

But these near-term impacts are small compared to the potential future loss of millions of jobs should energy prices increase dramatically as a result of continuation of the current trend of demand and static or declining production.

The United States could face repeated jolts as energy supplies become increasingly unreliable and actual shortages become more frequent. In addition, regional disruptions would result from unusual weather, failure to bring capacity on line, and many other factors. In some cases, the American people would experience inconvenience only. In others, economic activity would grind to a halt. It is difficult to predict which fuel or which region would encounter problems and when, but future supply disruptions are very likely.

A massive effort to meet high rates of increase in demand from domestic production alone would have adverse impacts on the quality of the environment. The Nation would have to push ahead with every energy source at the fastest rate possible. Even larger numbers of coal and nuclear power plants would have to be constructed; oil shale and synthetic fuels would have to be developed quickly; and new technologies would have to be brought on line before their environmental effects were fully evaluated.

The investment requirements for an all-out production effort would be staggering. The extra capital investment required to meet a production level of 48 million barrels of oil equivalent per day by 1985 would exceed $900 billion, and represent ____ percent of total investment during that period. During the last five years, energy production has required 25 percent of new invested capital. Investment funds would have to be diverted from other activities to meet these needs. Additional large investments would be necessary to convert industrial and utility plants from oil and gas to coal.

Intensive energy development would also aggravate regional problems. If shortages should occur, consuming States would press actual and potential producing States to deliver increasing quantities of fuel at the expense of the environment and, in the case of the West, a distinctive way of life. Energy availability could become a major influence on location of economic activity, with significant demographic consequences. Tension could lead to "energy balkanization" among the States and regions of the country, and a progessive embitterment of national politics.

IMPLICATIONS FOR THE INTERNATIONAL COMMUNITY

If imports should continue to rise, the Nation's energy crisis will affect the position of the United States as a world leader. In the past, the United States has enjoyed flexibility in formulating and executing its foreign policy. The Nation's current energy vulnerability affects not only its relationships with Middle Eastern countries, but also the whole structure of international relations. Although greater cooperation is necessary among the industrialized nations, the energy crisis also raises the specter of future competition among political allies for diminishing oil supplies. In general, the political strength and cohesion of Western nations is being eroded by continued vulnerability, increasing balance of payments deficits, and a general weakening of their economies.

Although the United States faces very serious problems, they are far less severe than those faced by most other nations. The embargo and subsequent fourfold increase in oil prices has already demonstrated the industralized countries' vulnerability to arbitrary price increases. In 1973, the OECD countries and the OPEC countries each

had a small surplus in current account balances with the rest of the world, but in 1974 that situation was radically altered. The OECD countries experienced a $46 billion deficit on current account, while the OPEC surpluses increased to $56 billion; in 1975 and 1976 the situation improved only marginally. Since 1973, the oil importing countries have paid out $367 billion in oil import bills to the 13 OPEC countries. That is almost three times higher than the import bill would have been with 1973 prices. Each additional 10 percent price increase adds $13 billion to the OPEC balance.

A recent OECD study found that the direct and indirect price effects of the 1973 and 1974 OPEC price increases were responsible for approximately 7 percentage points, or one-half of the 14 percent inflation rate experienced by its member nations in 1974. The price increases led, by 1975, to a real drop in GNP of 11 percent from what it would have been without the 1973-1974 price increases, or the equivalent of two years normal growth. Thus, the oil price increases contributed significantly to the worst global recession since the Great Depression. Unemployment doubled over what it otherwise would have been, increasing by more than 2.5 percent.

Since 1973, many industrialized countries have made partial adjustments to these enormous short-term costs. But they still suffer from large balance of payments claims, retardation of capital formation, and a decrease of potential productivity.

Price vulnerability is as harmful to long-term economic and political interests as supply vulnerability. An embargo brings about short-term but severe hardships, while the invisible crisis of growing demand-supply imbalance continues to erode the economic strength of the industrialized nations.

The massive oil price increases since 1973 have most adversely affected those developing countries without domestic oil supplies. Their oil bill shot up from $3 billion in 1973 to over $13 billion last year. The indirect cost to their economies was even more pronounced. Because of the recession and inflation in the industrialized countries, demand for the developing Countries' exports slackened while the prices for their non-energy imports as well as their energy imports rose. In 1975 alone, the price to developing countries in indirect foreign

exchange losses from higher oil prices was $30 billion, pushing their total foreign debt to more than $170 billion.

The developing nations cannot significantly reduce their energy consumption since they are not large energy users. As increasing amounts of scarce foreign exchange are expended for energy imports, other development needs suffer. Many developing countries have reached or even surpassed the limits of their creditworthiness. Their ability to grow may depend increasingly on the willingness of governments and private financial institutions in the industrialized countries to extend additional large amounts of credit with less than full confidence of ultimate repayment.

Higher oil prices have caused serious financial imbalances that will continue into the future. Debt service accounted for 20 percent of world export receipts in 1976. As a result, many countries are finding it more difficult to obtain additional lending from the commercial capital markets. The large balances held by OPEC have been invested in the larger oil importing countries, and much in short-term instruments. Most of these funds are invested in the United States and Europe, with only limited amounts flowing to the

weaker developed countries and to developing countries. Ironically, it is these very countries that suffer most from the energy crisis and have the greatest need for a compensating flow of capital.

The oil producing countries and the oil consuming countries share a number of long-term interests. Both need a growing global economy and a liberal trading system that will ensure the availability of future markets for their products. All nations, including the oil producers, will someday have to meet their energy needs from resources other than oil and gas. Hence, all nations are part of the coming energy transition, even though they are affected very differently.

ALTERNATIVES FOR THE UNITED STATES

The most effective and economical way for the United States to regain control of its energy destiny is to reduce imports through energy conservation. Waste of energy in the Nation--in cars, homes, commercial buildings, and factories--is greater than the total amount of United States oil imports. Thus, wasted energy is the most attractive source of new energy supply. Clearly, the foundation of a national energy plan must be conservation of energy.

But conservation alone will not produce enough savings to meet the needs of a growing economy. Attention must, therefore, turn to the options for increasing domestic energy supply. The United States, unlike most other industrialized nations, is blessed with large domestic energy resources. The most abundant domestic fossil fuel--90 percent of total United States proven reserves--is coal, but it is difficult to extract, hard to handle, expensive to transport, pollutes the air, and leaves a residue of ash. Nevertheless, with proper technologies, coal can be mined and burned in an environmentally acceptable manner.

Current estimates suggest that by 1985 coal production could be 1 to 1.2 billion tons. (See figure II-5.) The limitations on coal use have been on the demand side, not supply. In recent years, the development of coal has been impeded by environmental uncertainty, a decrease in the rate of growth of electricity demand, the ineffectiveness to date of the Government's coal conversion program, as well as coal's inherent transportation and handling problems.

Expanded use of coal will depend in large part on the introduction of new technologies that permit it to be

burned in an environmentally acceptable manner, in both power plants and factories, for electricity, process steam, and heat. Efforts must also be made to perfect processes for low BTU gasification of coal and develop new technologies for high BTU gasification.

Coal production will increase in Western States, but Eastern underground coal mining can also be expanded. Research efforts to develop safer and more productive techniques for underground mining are good investments for near term payoff.

Nuclear energy can assist in meeting the Nation's total net energy deficit. The 63 nuclear plants operating today provide approximately 10 percent of the Nation's electrical energy, about 3 percent of total energy output. The currently projected growth rate of nuclear energy is substantially below prior projections due to decreased demand for electricity, citizen opposition, health and safety safety problems, lack of waste disposal programs, and concern over nuclear proliferation. The issue of proliferation is central to the question whether the United States should enter a plutonium economy with commercial reprocessing and construction of a commercial breeder reactor.

In the period from 1980 to 1990, the construction of new nuclear plants could supplement coal-fired plants to meet the minimum projected electrical generating needs of the Nation. This supplement will be particularly necessary because of environmental constraints on the use of coal.

In the next century, the Nation will need major new energy sources. (See figure II-6.) Breeder reactors could stretch uranium supplies out almost indefinitely, and nuclear fusion, if it can be developed beyond the research stage, could supply almost limitless amounts of energy. But plutonium breeder reactors increase problems of proliferation; and fusion, if successfully developed, would not be commercially available until well into the next century.

Because of these uncertainties and potential environmental and proliferation problems, the Nation should accelerate the development of renewable energy sources, such as the sun, the wind, the oceans, and the natural heat of the earth's crust. Solar energy is the most promising of these sources because it is inexhaustible and lends itself to decentralized production and use. But, even under the most optimistic reasonable assumptions, the alternative sources

of energy will not be able to replace conventional fuels as the Nation's primary energy supply before the end of the century.

* * *

The energy prognosis for the United States and the world is serious if high demand growth continues unabated. If demand continues to grow at an accelerating pace, the United States and the world could approach the brink of oil exhaustion. Costs could increase significantly as world production reaches its peak, and then begins a decline. Economic and political instability throughout the world might ensue. By the next century, the United States and the world might run out of oil at bearable prices altogether.

This prognosis can be changed only by strong action by governments throughout the world. The United States, the largest energy user, can take the lead. A continuation of recent United States policies will not suffice because they have created a general pattern of consumption that cannot be sustained in a world where energy is scarce and expensive. New American policy, directing a strong effort to reduce domestic energy demand overall and to shift reliance from

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scarce to abundant supplies, can help ease the transition to new energy realities.

CHAPTER III
PRINCIPLES OF A NATIONAL ENERGY PLAN

Success of a national plan to solve the energy problem depends on broad public understanding of the gravity of the problem, together with a commitment to action and willingness to endure some sacrifice. An energy plan that demands nothing from the American people is no energy plan at all. It is merely a prescription for chaos at a later date.

The fundamental question is whether this society has the internal discipline to select and pursue a coherent set of policies well in advance of a threatened disaster. Western democracies have demonstrated such discipline in the past in reacting to immediate, palpable threats to survival, as in time of war. But they have had less success in harnessing their human and material resources to deal with less visible threats to their political and economic systems. When dangers have been incremental in nature, and the day of reckoning has been far in the future, democratic political leaders have found it difficult to summon the courage to take decisive and perhaps unpopular action. But such action will be required to meet the energy crisis. If the Nation continues to drift, it will do so in a perilous sea.

To be effective, a National Energy Plan must be based on a series of broadly shared, comprehensive and coherent principles. From such principles, a wide range of concrete actions can flow. But unless actions are anchored to underlying principles, they will be haphazard, inconsistent, inefficient, and ultimately unsuccessful.

National consensus rests on agreement over both the principles that guide public policy and the actions that are necessary to implement that policy. In response to the the President's request for comments and recommendations, American citizens from across the Nation have shown a strong desire to understand the energy problem and to do something about it. The American people are ready for action. What has been lacking is leadership.

The principles set forth here provide a framework not only for present policies, but also for development of future policies. A National Energy Plan cannot be immutable. It must be adjusted continually as new experience and knowledge are gained, as governmental programs take effect, as new technologies develop, and as the world's strategic political and economic circumstances change.

The following ten principles divide into two groups. The first five establish the context in which energy policy must be formulated. The remaining five are the fundamental principles of the proposed comprehensive National Energy Plan itself.

The first principle is that the energy problem can be effectively addressed only by a Government that accepts responsibility for dealing with it comprehensively and by a public that understands its seriousness and is willing to make necessary sacrifices. The declining availability of oil and natural gas will affect virtually all energy prices and consumption in the United States, for the various energy supplies are all part of an inter-related energy market. Therefore, in this democratic society a solution can be found only in comprehensive Government policy-making informed by public comment and supported by public understanding and action.

The Federal Government can pass laws and encourage action. State and local governments can play active roles. But this society can function at its best when citizens voluntarily work together toward a commonly accepted goal. Washington can and must lead, but the Nation's real energy policy will be made in every city, town, and village in the Country.

The second principle is that the Nation must protect its security by reducing its vulnerabiliity to potentially devastating supply interruptions as it gradually shifts from oil and natural gas to other fuels. Although conserving energy in general is an important goal, conserving oil has an even higher priority. Continued high vulnerability to embargoes or other interruptions of foreign oil supply is unacceptable.

The solution, however, does not lie in a crash program of production to achieve energy independence. There is no need for massive, reckless, development of all the Nation's energy resources, draconian conservation measures, pollution of the environment, and rejection of the substantial economic benefits of oil imports, all in the name of energy independence.

An adequate and far more sensible goal is relative invulnerability. The United States can continue to import foreign oil if, through effective conservation and increased use of abundant domestic resources, such as coal, it reduces oil imports or at least prevents them from growing, and if it develops a large strategic petroleum reserve and contingency plans to deter another embargo and protect the economy should one occur.

The third principle is that the Nation must solve its energy problems in a matter that is equitable to all regions, sectors and income classes. No group should be asked to bear an unfair portion of the total burden, and none should reap undue benefits from the Nation's energy problems. In particular, the elderly, the poor and others on fixed incomes must be protected from disproportionately adverse effects on their income. Energy is as necessary to life as food and shelter.

The energy industry needs adequate incentives to develop new resources and is entitled to reasonable profits for exploration and production, but it should not be allowed to reap large unearned profits as a result of circumstances not associated with either the marketplace or risk-taking. The fourfold increase in oil prices and the policies of the OPEC cartel should not be permitted to create unjustified profits for industry at consumers' expense. By raising the world price of oil, OPEC has increased the value of American oil in existing wells. National energy policy should capture that increase in value for the American people. However, when incentives are legitimately needed to stimulate

production, energy policy must allow petroleum prices to rise. The distribution of the proceeds of higher prices among producers and consumers must be based on the principles of equity and efficiency if the Nation is to meet its energy goals and spread the costs fairly across the population.

The National Energy Plan must also allocate regional benefits and sacrifices equitably. Some regions, particularly the Gulf States and Appalachia, are largely energy producers. Other regions, such as the Rocky Mountain and Great Plains States, have large energy reserves which have not yet been extensively developed. And still other regions, such as New England and California, import most of their energy from other regions and other nations.

The National Energy Plan must assure that policies are equitable across the country, and that special needs are met. Prices for energy should be as uniform as possible to prevent economic dislocations and disproportionate consumer costs. The environmental quality of the States with untapped resources must be protected by strict standards effectively enforced. Producing States should be fairly compensated and

consuming States should be assured of energy supplies at reasonable prices.

The Federal Government can enact national policies to further these principles. But States within the various regions must also accept their share of the responsibility for national equity if the Nation is to avoid "energy balkanization." They will be asked to adopt energy policies that are based on national as well as local needs.

The fourth principle is that healthy economic growth must continue, and adverse macroeconomic effects must be avoided. The energy problem can and must be solved without turning off or slowing down America's economic growth. No matter how theoretically attractive a particular policy may be, if it produces unemployment, adds to spiraling inflation, or curbs economic growth, it must be rejected. National energy policy can move toward economic rationality while protecting jobs, avoiding rampant inflation, and maintaining economic growth. Conservation initiatives, for example, not only contribute to productivity, but also create tens of thousands of new jobs. Indeed, in the long run, the Nation can continue to enjoy economic health only if it solves its energy problems.

The fifthprinciple is that the National Energy Plan must be in harmony with national policies for the protection of the environment. Energy policy must sustain and improve the quality of life of the American people. It would be ironic if, in moving toward that objective, the Nation unnecessarily degraded the quality of the environment and made this country and the planet a less healthy place in which to live. Energy production inevitably places pressures on the environment. But there is no inherent conflict in the Nation's twin objectives of meeting energy needs and protecting the quality of the environment. The energy crisis and environmental pollution both arose from wasteful use of resources and economic and social policies premised on infinite and cheap resources. The solutions to many energy and environmental problems follow a parallel course of improving efficiency and harnessing waste for productive purposes.

The sixth principle of the National Energy Plan and the cornerstone of national energy policy is that energy demand must be reduced through conservation. Energy conservaton is the most practical course of action for the United States and for the nations of the world. It is cheaper than bringing

in new supplies, causes far less damage to the environment and can lead to quick results. Virtually all poorly insulated homes in the United States could be brought up to strict fuel efficiency standards in less time than it now takes to design and build one nuclear power plant. Insulating these homes would save energy at half the cost of an equivalent amount of new energy supply.

Although conservation measures are inexpensive and clean, compared to energy production, they involve sacrifice and are difficult to implement. If automobiles are to be made smaller and less powerful, the American public must accept some sacrifice in comfort and horsepower. If industry is required to make energy-saving investments, there will be some increases in the cost of consumer products. These sacrifices, however, need not result in major changes in the American way of life or in reduced standards of living. If efficiency of use improves, the impact of rising prices can be significantly moderated. Energy conservation, properly implemented, is fully compatible with growth, the development of new industries and the creation of new jobs and opportunities for American workers.

Existing energy waste in America is a potential new source of supply, equal to or even greater than all the oil the Nation now imports. Although this waste cannot be eliminated overnight, the U.S. should establish as a national goal an increase in energy efficiency of two percent a year for the rest of this century.

The seventh principle underlying the National Energy Plan is that energy prices must reflect the true replacement cost of energy. Energy prices should move toward a level that reflects the true value of energy in order for market signals to work in harmony with conservation policy. If the cost of expensive foreign oil can be averaged in with the cheaper domestic oil, consumers overuse oil. Government policy that promotes overuse by artificially holding down prices misleads consumers into believing that they can continue to obtain additional quantities of oil at less than its replacement cost.

Neither government policy nor market incentives can create additional oil or gas in the ground. But from a long-term perspective, prices can be important influences on production and use. As long as energy consumers are enticed into

believing that they can continue to pay yesterday's prices for tomorrow's energy, they will continue to use more energy than the Nation can really afford and make the inevitable transition more sudden and difficult.

Artificially low prices for particular energy sources may also distort interfuel competition. The artificially low price of natural gas, for example, has encouraged its use by industry and electric utilities, which could also use coal, and has made it unavailable for many households, which could make better use of its premium qualities.

The eighth principle underlying the National Energy Plan is that energy producers and consumers alike are entitled to reasonable certainty as to Government policy. An inadequately organized Federal Government, conflicting signals from different federal agencies, and unwieldy and confusing regulatory procedures have resulted in major bottlenecks in the development of energy resources. The Plan must resolve a wide range of uncertainties that have impeded the orderly development of energy policy and projects. There are, of course, uncertainties that are inherent in a market economy; and government cannot and should not shelter industry from

the normal risks of doing business. But it can and should provide business and the public with a clear and consistent statement of its own intentions so that they can make investment decisions.

The proposed Department of Energy must have and exercise the authority to bring order to policy development, to resolve conflicting and confusing regulatory requirements and to provide a data base that is accepted by the public and Congress.

The ninth principle of the National Energy Plan is that resources in plentiful supply should be used more widely and the Nation should begin the process of moderating its use of those in short supply. Although coal comprises 90 percent of the nation's total fossil fuel reserves, the United States meets only 18 percent of its energy needs from coal. Seventy-five percent of energy needs are met by oil and natural gas although they account for only seven percent of United States reserves.

If the United States is to preserve its scarce reserves of oil and gas and reduce imports, environmentally acceptable coal production and use must increase significantly.

Policies must be forged to reduce consumption of oil and gas, particularly industrial and electrical utility use, and to replace them with abundant coal resources, supplemented by light water nuclear reactors.

To the extent that electricity from coal or nuclear power is substituted for oil and gas, the total amounts of energy used in the country will be somewhat larger because of the inherent inefficiency of electricity. But conserving scarce natural gas and oil is more important than saving coal or uranium, which constitute much larger sources of domestic supply. When renewable alternative energy sources, such as solar energy, are used, there is no drain of the Nation's fuel reserves.

The tenth principle is that the use of alternative sources of energy should expand. Relatively clean and inexhaustible sources of energy are a hopeful prospect, as supplements to conventional energy sources in this century, and as major sources of energy in the next. Traditional forecasts of energy use assume that renewable resources, such as solar and geothermal energy, will play a minor role in the Nation's energy future. Unless positive and creative actions are taken

by Government and the private sector, these forecasts will become self-fulfilling prophecies. Other technologies that increase efficiency of energy use, such as cogeneration of industrial process steam and electricity, should also be encouraged.

A National Energy Plan should not be premised on technological miracles. But it should also not be so rigidly structured that alternative technologies are viewed as mere curiosities. Breakthroughs are possible, and the estimated potential of energy sources does change over time. Because of the great promise of alternative energy sources, the Government should take all reasonable steps to foster and develop them.

* * *

The ten principles of the National Energy Plan are designed to facilitate the transition to realistic prices and scarcity with equity and predictability and without disruption to the economy. They provide a realistic framework for addressing a serious and worsening problem. By pursuing conservation, bringing energy prices into line with replacement costs, and expanding its use of coal, the Nation can

keep oil imports at acceptable levels. Backed by a strategic petroleum reserve and contingency plans, the United States can become relatively invulnerable to supply interruptions. Measures can be designed to assure that the American worker, the poor and the elderly do not suffer as a result of rising prices. Economic growth can be promoted and inflationary pressures kept within bounds. Regional and environmental imbalances can be recognized and corrected with maximum equity. And alternative sources of energy can be promoted to meet both medium and long-term needs.

The United States is at a turning point. It can opt, through piecemeal programs and policies, to continue the current state of drift. That course would require no hard decisions, no immediate sacrifices, and no adjustment to the new energy realities. That course may, for the moment, seem attractive. But, for each passing day that the Nation falls further behind in solving its energy problems, its economic and foreign policy position weakens, its options dwindle, and the ultimate transition to the inevitable higher prices and growing scarcity becomes more difficult.

The alternative to continued drift is the comprehensive National Energy Plan, set forth in the next four chapters.

April 6, 1977

CHAPTER IV

THE NATIONAL ENERGY PLAN: CONSERVATION

INTRODUCTION TO THE PLAN

The specific proposals contained in the National Energy Plan constitute a pragmatic approach to solving the critical energy problems of the Nation. The Plan blends market, tax, regulatory, and research initiatives to achieve the Nation's energy goals in the most equitable, non-disruptive and environmentally acceptable manner.

This pragmatic approach reflects the tenor of comments received from the public during the preparation of the Plan. As a general matter, members of the public who expressed views preferred voluntary to regulatory measures, though not uniformly so. The public placed strong emphasis on conservation, stockpiling of oil to reduce vulnerability, and development of solar energy and other renewable resources. A summary of the public participation in the development of the National Energy Plan appears in the appendix to this report.

Many of the proposals to reduce demand or to increase supply are designed to work through the market system by providing tax incentives and disincentives. In some cases, however,

measures that work through the market would not be effective, would be difficult to administer, would raise prices unduly, or would be inequitable. In those instances, mandatory standards are proposed. Throughout, the Plan is designed to ease adverse impacts on employment and on the economy generally, to protect consumers from unwarranted price increases, and to make certain that all sectors of society--including the Government itself--share in the burdens.

CONSERVATION

Conservation, the cleanest and cheapest source of energy supply, is the cornerstone of the National Energy Plan. Conservation can save the environment from some of the damages that result from exploitation of fossil fuel resources. It can save the economy from some of the massive capital flows required by frontier oil and gas development, new electricity generating plants, and sophisticated conversion technologies. It can reduce imports, and international competition for the diminishing world supply of oil.

If vigorous conservation measures are not undertaken, energy demand will increase by 33 percent between now and 1985. At that rate, oil imports would increase from 7.2 million barrels

per day in 1976 to 12 million by 1985. That kind of deterioration in the Nation's energy position need not occur. There are abundant opportunities in America to eliminate energy waste. The President's proposals would save 4 million barrels of oil equivalent per day by 1985. Savings of that magnitude can be achieved by effective conservation in homes, in factories, utilities, and businesses, and in transportation.

What have ?

TRANSPORTATION

Transportation consumes 26 percent of U.S. energy, and half of that is used by automobiles. There is no more telling symbol of American energy waste than large, powerful, accessory-laden automobiles each carrying one person on a crowded highway. In Europe, the average car weighs 2700 pounds; in the United States, 4100 pounds. The result is far greater fuel efficiency in Europe. (See figure IV-1.) Five to six million barrels of oil a day--a large percentage of total oil imports--are consumed by automobiles. Smaller and more efficient American cars could save over 50 percent of current gasoline consumption. No serious energy policy can ignore that potential.

In late 1975, the Congress enacted legislation requiring that the average mileage of new cars be 19 miles per gallon (mpg) by 1980, and 27.5 mpg by 1985, compared to _____ mpg in 19__. Even if the energy efficiency of new American automobiles increases by almost 50 percent and the statutory standards are met, total gasoline consumption by automobiles in 1985 will be no lower than it is today. However, the statutory testing procedure has the effect of reducing the effective standards over 10 percent below the prescribed numbers. And there are fears that without further measures, consumers will continue their big-car buying habits and one way or another the standards will not be met. The present legislation is not adequate, therefore, to make reductions from current gasoline consumption. The President has proposed a three point program to reduce gasoline consumption 10 percent by 1985.

First, a graduated excise tax would be imposed on new vehicles with gas mileage below the applicable mandated mileage standard under current legislation. Rebates would be made for cars with better than average mileage. The tax would be designed to go up in proportion to the additional gasoline used and the rebates would be designed to track the

savings. Also the tax would start low and increse with each year until 1985. In 1978, a car falling 3 mpg below the statutory 19.0 mpg would bear a tax of $_____; at 7 mpg below the standard, the tax would be $_____. By 1985 a tax 3 mpg gelow the standard of 17.5 mpg would bear a tax of about $_____; at 7 mpg below the standard the tax would be about $_____. Rebated would be made on a similarly graduated basis with the maximum rebate about $_____. But rebates would be available only to the extent taxes are imposed. The tax and rebate schedules have been designed so that estimated tax receipts would equal estimated rebate payments, with no gain or loss to the Treasury. The schedules would be fixed so that consumers would know the exact amount of tax or rebate on every car. The amount of rebates for fuel-efficient cars manufactured in the United States and Canada would be determined by the amount of taxes collected on fuel-efficient cars manufactured in those two countries. Cars manufactured in all other nations combined as a group would be entitled to rebates only to the extent that taxes were collected on cars manufactured in those nations.

Second, the current EPA test procedures for measuring automobile fuel economy will be made more realistic. The

current procedures do not accurately reflect actual driving conditions, and overstate fuel efficiency by 10 percent. Revised procedures will change the existing statutory standards but rather will give consumers a more accurate gauge of automobile mileage. However, a realistic standard of 27.5 mpg will be established by 1985, which will, in effect, mean an improvement of over 2.5 mpt over the 1985 standard under existing law.

Third, a standby gasoline tax would be enacted. It would take effect if gasoline conservation did not meet stated goals. The goal between now and 1980 would be to hold total gasoline consumption constant. From 1980 to 1985, the goal would be an annual 2 percent reduction in total gasoline consumption. The base for measuring performance would be gasoline consumption during the period from October 1, 1976 through September 30, 1977. Following any year in which the gasoline conservation goal was not met, a 10 cents per gallon tax would go into effect. If the Nation Nation repeatedly failed to meet the consumption goals, the tax could reach as high as 50 cents per gallon.

All revenues generated by the gasoline tax would be rebated to individuals on a per capita basis. The tax would produce no net gain to the Treasury and no net loss to consumers as a group. The impact of the tax on middle and lower income consumers would be progressive: their rebates would exceed the taxes they paid on gasoline.

Passenger automobiles are not the only wasteful vehicles. Under the Energy Policy and Conservation Act, the Secretary of Transportation plans to promulgate by next July efficiency standards for light duty trucks weighing 6,000 pounds or less. The President has asked the Secretary to cover a broader range of trucks by raising the limit to 10,000 pounds.

The Federal Government itself must set an example in reducing gasoline consumption. The Plan includes an Executive Order requiring that all GSA fleet purchases meet an average that is 4 mpg above the applicable statutory standard. This initiative not only will save gasoline, but also will provide incentives for the development of more fuel efficient vehicles.

The Federal government will also initiate a major vanpooling demonstration program. About 6,000 vans will be purchased by the Federal government and made available to its employees. All capital costs of the vans, plus interest, will be paid back to the Federal government by the riders, who will also bear the operation and maintenance expenses. If vanpooling were used widely across the country, savings of over _____ percent of total commuting gasoline use could be achieved.

Many other efforts can be made to reduce gasoline consumption. Mass transit must be expanded to provide reliable and cheap transportation and to reduce gasoline consumption, congestion, and air pollution. Air pollution inspection and maintenance programs can also lead to gasoline savings of up to 2 percent within the metropolitan areas conducting such programs.

The total savings from these transportation initiatives amount to 1.2 million barrels of oil a day by 1985. The largest portion of this saving would come from the graduated excise tax.

Buildings

There are more than 100 million buildings in the United States, of which 70 million are residences. Almost 20 percent of United States energy is used to heat and cool them. Some of these buildings needlessly waste as much as half of that energy. This energy inefficiency is a direct result of the cheap energy era in which most of these structures were built.

The potential savings from improving the energy efficiency of the Nation's stock of buildings is enormous. (See figure IV-2.) Installation of ceiling and roof insulation, weatherstripping of doors and windows, caulking of cracks, installation of clock thermostats, and simple furnace modifications could save 900 thousand barrels of oil per day by 1985.

The President has proposed a national weatherproofing program containing the following elements:

First, homeowners would be entitled to a tax credit of 25 percent of the first $800 and 15 percent of the next $1,400 spent on approved conservation measures. The credits would

be available for measures undertaken between April 20, 1977 and December 31, 1984.

Second, a time-of-transfer provision would permit federally insured financial institutions to make mortgage loans only where the mortgaged house meets minimum Federal energy efficiency standards or where the amount necessary to bring the house into compliance is placed in escrow to pay for the necessary work.

Third, state public utility commissions would be required to direct their regulated utilties to offer to their customers a voluntary weatherproofing program and to inform them of other available weatherproofing programs. The utilities would be required to offer to have the weatherproofing done at their initial expense and to recoup the cost from customers through monthly bills. The utilities would be permitted a rate of return on this activity no higher than their average cost of capital. Other fuel suppliers would be encouraged to offer similar programs, with the assistance of the State Energy Offices.

Fourth, Federal mortgage assistance legislation would be amended to require lending institutions to open mortgages

to enable homeowners to cover the cost of weatherproofing. The interest rate for the existing part of a reopened mortgage would remain the same, and the interest rate on the additional weatherproofing loan would be no higher than the current mortgage market rate. All federally insured financial institutions would be required to participate in this program, and other financial institutions would be encouraged to do so.

Fifth, a two-part program would address the special needs of low and fixed-income people. Funding for the weatherization program administered by the Federal Energy Administration under Title IV-A of the Energy Policy and Conservation Act would be increased to $130 million in fiscal 1978, $200 million in 1979, and $200 million in 1980. The Secretary of Labor has been directed to provide equal funding under Title III of the Comprehensive Employment Training Act to supply labor for the weatherization effort. The Department of Agriculture and the REA cooperatives will launch a joint program to reach homes in rural America.

Sixth, businesses would be entitled to a 10 percent tax credit for investments in recognized conservation measures. A list of elegible measures would be published by FEA.

Seventh, a 50-50 Federal grant program would assist non-profit institutions such as schools and hospitals in weather-proofing. The program would be funded at the rate of $300 million per year for 3 years.

This weatherproofing program is designed to bring virtually all residences and many public and other buildings up to minimum Federal standards within a decade. The potential savings from improving the energy efficiency of the Nation's stock of buildings is enormous. Installation of ceiling and roof insulation, weatherstripping of doors and windows, caulking of cracks, installation of clock thermostats, and simple furnace modifications could save 900 thousand barrels of oil equivalent per day by 1985.

New buildings must also be energy efficient. Over the next 10 years, the United States housing stock will grow by 23 million units, or 3 percent; and the United States stock of commercial buildings will grow by _____ units, or ____ percent. The President has directed the Department of Housing and Urban Development to advance by one year, from 1981 to 1980, the effective date of the mandatory standards required by the Energy Policy and Conservation Act, and has

requested an additional $10 million for fiscal 1978 to fund this acceleration. Compliance with these standards could save 400 thousand of oil equivalent barrels per day by 1985.

Finally, the President has issued an Executive Order to improve the efficiency of Federal buildings. It establishes performance goals for all categories of newly constructed Federal buildings to achieve in each category a 45 percent reduction from 1975 energy consumption levels. It establishes a 7 year program to make existing Federal buildings more energy-efficient through cost-effective capital and operating improvements. The Executive Order also establishes energy efficiency targets for each category of Federal buildings. The targets are designed to achieve by 1985 a 20 percent improvement over the level of energy consumption in Federal buildings in 1975.

APPLIANCES

Major appliances such as furnaces, air conditioners, water heaters and refrigerators account for 20 percent of the Nation's energy consumption*. Most of these appliances could achieve significant reductions in energy use with

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* This figure includes the heating and cooling of buildings.

relatively small increases in cost. Current legislation relies mainly on voluntary efforts to meet industry-wide average targets, and permits the establishment of mandatory standards only after long delays. The President has proposed new legislation to streamline the regulatory process and establish mandatory minimum appliance standards by 1980. The proposal could result in significant savings, amounting to as much as 400 thousand barrels of oil equivalent per day by 1985.

COGENERATION OF ELECTRICITY AND PROCESS STEAM

Of the 8.9 million barrels of oil equivalent per day consumed by industry in 1975, only 6.7 actually performed useful work; the rest, about one-quarter of the total, was lost. Two-thirds of the energy used in electrical production is wasted. Waste heat represents an energy source that in 1975 was equivalent to 5.4 million barrels of oil per day.

One way to use this waste heat is through cogeneration, the simultaneous production of processed steam and electricity. Cogeneration provided 17 percent of United States energy as recently as 1950, but has dwindled down to 4 percent. In West Germany, cogeneration provides about 29 percent of total energy needs.

Although cogeneration is economic today and will become increasingly attractive as energy prices rise, a variety of institutional barriers impede its development. The President has called for a major program to remove these barriers by assuring that industrial firms generating electricity receive fair rates from utilities as to both the surplus power they would sell and the back-up power they would buy. Industries generating electricity would be exempt from State and Federal public utility regulation, and would be entitled to use utility transmission facilities to sell surplus power and buy back-up power. An additional tax credit of 10 percent above the investment tax credit would be provided for industrial and utility co-generation equipment. Finally, industries and utilities which invest in cogeneration equipment could receive exemptions from the requirement to convert from oil and gas in cases where an exemption is necessary for cogeneration. These initiatives could provide savings from cogeneration of up to 200 thousand barrels of oil equivalent per day by 1985.

The Plan seeks to achieve the large savings available from productive use of waste heat through positive incentives. Careful review will be made of progress in the use of waste

heat. If industry and utilities do not respond adequately, consideration will be given to a tax on waste heat or other direct measures to reduce the loss of heat.

The Government proposes to demonstrate a commitment to cogeneration by funding in fiscal 1978 a program to make use of the vast quantities of waste heat generated by the Energy Research and Development Administration's uranium enrichment plants at Oak Ridge, Tennessee, Paducah, Kentucky, and Portsmouth, Ohio, and its nuclear facility at Savannah River, South Carolina. The Energy Research and Development Administration would seek to recover the waste heat for use by households, industry and agriculture. The amount of heat rejected by these four facilities annually equals about 50 to 60 million barrels of oil equivalent. The proposed program will demonstrate the development of community-industrial complexes for effective use of available energy sources while maintaining the quality of life.

INDUSTRIAL CONSERVATION

Industry consumes almost 40 percent of the Nation's energy. Since the embargo, it has done better than other sectors in

conserving energy, but still has a large potential for further savings. (See figure IV-3.) Industry has an incentive to make energy-saving investments that are cost-effective from a profit-maximizing perspective. However, energy costs are tax deductible as a business expense; the price industry pays for much of the energy it consumes is not the marginal cost of energy, but rather an average or "rolled in" cost, and often industrial firms receive volume discounts; in some cases energy costs are small relative to the first costs of energy-saving investments. Therefore, energy-saving investments frequently have a lower value to industry than to society.

The oil and gas pricing program, discussed at pages ___-___ above, and the taxes on industrial and utility use of oil and gas, discussed at pages ___-___ above, would stimulate substantial improvement in overall energy efficiency. The savings from these measures would be equivalent to ____ million barrels of oil per day by 1985.

To achieve greater savings within the industrial sector, the President has proposed additional initiatives. The special 10 percent investment tax credit for recognized energy

conservation measures would extend to investment in energy-saving equipment, as well as to building improvements. A list of eligible investments would be published by the Federal Energy Administration. Savings from the tax credit program would amount to _____ barrels of oil equivalent per day by 1985.

In addition, FEA would set mandatory standards for certain industrial equipment, such as boilers and electric motors. Compliance with the standards would save an additional _____ barrels of oil equivalent per day by 1985.

UTILITY RATE REFORM

Conventional utility pricing policies discourage conservation. The smallest users commonly pay the highest per unit price due to practices such as declining block rates. Rates often do not reflect the costs imposed on society by the actions of utility consumers. The result is waste and inequity.

For example, electrical energy is difficult and expensive to store, so a utility's need for plant and equipment is determined by its peak demand. If electricity consumption during peak periods were reduced, fewer costly new additions to

utility capacity would be needed. Equally important, since peaking units commonly burn oil and gas, a reduction in peak demand would save these scarce fuels.

The President has proposed comprehensive legislation under which State public utility commissions would require their regulated utilities to reform rate structures in the interest of conservation and equity. First, utilities would be required to phase out promotional, declining block, and other promotional rates. Electric utilities would be required to offer each customer who is willing to pay metering costs daily off-peak rates. Such rates would provide a strong incentive for customers, particularly industrial customers, to shift energy use from peak to non-peak periods. Similarly, homeowners would have an incentive to wash and dry clothes at night when rates were cheaper, or to install equipment that stores energy during off-peak hours for use during peak hours. Second, electric utilities would be required to offer lower rates to customers who are willing to have their power interrupted at times of highest peak demand. Third, master metering--the use of a single meter for multi-unit buildings or complexes--would generally be prohibited in new structures. Individual metering

induces energy conservation, in some cases as much as 30 percent. Fourth, summer discounts for gas would be prohibited except to the extent of cost savings for storage. Fifth, interruptible rates for gas could not be lower than the lowest firm rate for summer service. Finally, utilities would be prohibited from discriminating against solar and other alternative energy sources.

These measures are estimated to reduce capital requirements by $ _____ billion, and to save _____ million barrels of oil equivalent per day by 1985.

IMPACT OF CONSERVATION MEASURES

The President's conservation program, including the oil and gas pricing proposals, can save about 4 million barrels of oil equivalent per day by 1985. Existing market forces and regulatory programs might bring about some of these savings without any new Federal initiatives. But "might" is not good enough. The energy crisis is serious enough to justify strong Federal action to make sure that possible savings are in fact achieved.

Conservation will not be easy, and it will require sacrifice. But some moderate sacrifice today will help avoid major jolts and far more painful sacrifices in the future.

April 6, 1977

CHAPTER V

THE NATIONAL ENERGY PLAN: OIL AND NATURAL GAS PRICING

Oil and natural gas supply 75 percent of the Nation's energy, but comprise only 7.7 percent of its reserves. Both are priced domestically below their marginal replacement cost, and as a result, the Nation overuses them. Oil imports were 41 percent of United States consumption in 1976. By holding down the price of domestic oil and "rolling in" the higher price of foreign oil, the United States has actually subsidized oil imports. The entitlements program, designed to equalize the cost of foreign and domestic oil to U.S. refiners, has become an administrative nightmare. Natural gas is wastefully burned by industry and utilities, and consequently has become unavailable for many homes. Natural gas shortages, like the one experienced this past winter, could occur in the future.

The Plan's oil and gas pricing proposals would capture for the public the differences between reasonable incentive prices for producers and world prices. Lifting all controls on prices would permit producers to reap unearned profits on oil and gas in existing reservoirs and to charge prices fixed by the OPEC cartel. Instead, the Plan rationalizes and extends price controls at levels that will provide

adequate incentives for producers. But industry and utilities must be charged the real cost of oil and gas so that they will stop their excessive use. The taxes proposed in the Plan would encourage conservation and the proceeds would be distributed equitably to the American people.

Under the Energy Policy and Conservation Act (EPCA) passed in December of 1975, producers generally are entitled to either $11.28 per barrel for new oil, or $5.25 per barrel for old oil, compared to the world oil price of $13.80. These pricing regulations encourage new development of existing fields while denying the marginal cost incentive to promising higher-priced new field development. In addition, despite lead times of three to eight years for discovering and developing such new fields, current policy does not tell producers what to expect beyond the next several years. In particular, there is continuing uncertainty as to Federal pricing policy after May, 1979, when, if nothing is done, present oil price controls will expire.

Regardless of Government policy, oil and natural gas will cost far more in the future than they have in the past

because newly discovered fields are more expensive to develop than existing fields. Moreover, as long as a large percentage of U.S. oil consumption is imported, the world price of oil will be the real cost to the United States economy of every extra barrel consumed.

Government policy must address these fundamental facts. It must provide for prices that encourage production from existing wells and development of new wells, but it must also prevent windfall profits. It must protect consumers from price-gouging, but promote conservation by making them recognize the real value of oil and gas in the energy marketplace.

The President has called for extension and revision of EPCA and the creation of a new long-range pricing system. Under this proposal, newly discovered oil would be allowed to rise to the current 1977 world market price in three years. Thereafter, newly discovered oil would continue to be priced at the 1977 world price, with adjustments for post-1977 price increases. This measure would establish a domestic price apart from post-1977 OPEC world prices. The current $5.25 and $11.28 price ceilings for previously discovered oil would be allowed to rise at

the general rate of price increases. Where it could be shown on a case-by-case cost basis that the $5.25 ceiling makes production from a marginal well uneconomical, that well would be eligible for the $11.28 price ceiling. Tertiary recovery from old fields would be eligible for the world price.

In order to ensure that market decisions will be based on the real value of oil, all domestic oil would be subject to a wellhead tax equal to the difference between its controlled price and the world price of imported oil. To protect consumers, the taxes collected would be entirely returned to the economy through per capita rebates. Consumers of fuel oil for residential heating would be protected from the impact of the tax by a dollar-for-dollar rebate system.

The increase in producer revenues for new discoveries of oil would provide an incentive for new production, while ensuring that there would be no windfall profits for existing wells. It puts the incentives where they belong. The oil tax would provide no net gain to the Treasury, and no net loss to consumers as a group, while establishing more realistic energy pricing. The entitlements program would be terminated.

There can be little doubt that because of time-consuming and cumbersome regulation of natural gas prices over the last 23 years, natural gas is now substantially underpriced. Development of new supplies has been retarded, and existing supplies are being wasted. A pricing policy which evolved at a time when gas was a surplus by-product of oil production is no longer sensible in a world where gas is a premium fuel in short supply.

The President has, therefore, proposed that FPC cost-based regulation of natural gas prices be set aside in favor of a new commodity value pricing approach. All new gas sold anywhere in the country from new reservoirs would be subject to a price limitation at the BTU equivalent of the average controlled price (without tax) of all domestic crude oil. That price, under current conditions, would be approximately $1.75 per Mcf. The irrational interstate-intrastate distinction would disappear for new production. Currently flowing natural gas would be guaranteed price certainty at levels currently set by the Federal Power Commission, with adjustments in accordance with other prices. Gas priced below 32 cents per Mcf would be allowed to rise to this minimum price.

Gas made available at the expiration of existing interstate contracts or by production from existing reservoirs in excess of contracted volumes would qualify for a price no greater than the current $1.42 per Mcf ceiling. Gas made available under the same circumstances from existing intrastate production would qualify for the same price as new gas, i.e., a price no greater than the domestic oil BTU equivalent price. Existing intrastate contracts would not be affected, and Federal jurisdiction would not be extended to intrastate pipelines. This new gas pricing system would increase the supply of gas in the interstate market without precipitously drawing gas away from the intrastate market.

Federal policy would also discourage use of gas by industry and utilities. The cost of the more expensive new supplies would all be allocated to industrial users, not to residential and commercial users.

Federal Power Commission jurisdiction would be extended to synthetic natural gas facilities, and such projects would be guaranteed a reasonable rate of return.

Emergency natural gas allocation authority would be extended into the future.

In addition to these pricing changes, taxes would be levied on industrial and utility users of oil and gas to encourage conservation and conversion to coal. These tax proposals are described in Chapter VI.

This pricing approach acknowledges that the true economic value of a depleting resource is its replacement cost. The proposed pricing system would give the price incentives producers say they need (BTU equivalency with oil) at the same time that it protects homeowners from natural gas prices in excess of levels needed to maintain production. For both oil and gas, it produces an integrated pricing scheme that places the incentives on harder-to-find new supplies, while ending the wasteful interstate-intrastate distinction for natural gas. It produces almost as much gas, oil and conservation as would result under deregulation, while preventing windfall profits, establishing realistic market prices for energy, and redistributing part of the higher retail price of oil to the American people.

April 6, 1977

CHAPTER VI

THE NATIONAL ENERGY PLAN: CONVENTIONAL SOURCES OF SUPPLY

Even with vigorous conservation, America's demand for energy will continue to grow. Domestic energy production must increase substantially if the Nation is to avoid unacceptable levels of imports. For the remainder of this century, America will have to rely almost entirely on the energy sources now at hand: coal, oil, natural gas, hydroelectric power, and nuclear power. While protecting human health and safety and the environment, Federal policy must prepare for coal and nuclear power to fill the growing energy gap created by rising demand and the inevitable decline of oil and gas.

COAL

Conversion to Coal and Alternative Fuels

Industry and utilities use 2 million barrels of oil per day and 10 trillion cubic feet of natural gas per year. Because oil and natural gas are scarce, a major program must be undertaken by industry and utilities to convert from oil and gas to more abundant resources.

Coal constitutes 90 percent of United States energy reserves, but currently supplies only 18 percent of energy consumption. The coal industry can expand production by 5 to 6 percent per year, and there is a small amount of excess capacity in the industry right now. The full development of America's coal resources has been hindered principally by lack of demand, rather than by constraints on supply. Accordingly, the President has proposed tax and regulatory measures to achieve industrial and utility conversion from oil and gas to coal and other fuels.

Beginning in 1980, all industries, except for fertilizer and crop drying, would be subject to a tax raising the cost of gas to 30 cents above the BTU equivalent of the average controlled price (without tax) of all domestic crude oil, and rising to 75 cents above the BTU equivalent by 1985. Utilities would be subject to a similar tax beginning in 1983, in recognition of the longer lead times required to convert their facilities to coal.

The use of oil as an industrial fuel would also be taxed beginning in 1980 at the rate of 60 cents a barrel, rising

to $3 per barrel by 1985. Utility use of oil as a boiler fuel would be taxed beginning in 1983 at $1.50 per barrel, rising to $4.50 per barrel by 1990. These taxes would be in addition to the wellhead tax on all domestic controlled oil.

Industry would be eligible for an additional tax credit of 10 percent in excess of the regular investment tax credit for expenditures made to convert facilities from oil or gas to coal, biomass, municipal solid waste, refuse-derived fuel, solar energy, or some other alternative. Utilities would be eligible for a direct rebate of any gas or oil taxes paid up to the amount of any conversion expenditure they would incur. Since the oil and gas tax on utilities would not begin until 1983, utilities undertaking an aggressive conversion program should be able to avoid the tax altogether or to keep the tax payments within reasonable bounds through their own actions. Only those utilities that did not convert would be subject to the tax.

All new electric generating plants would be prohibited from burning oil and gas and would be required to use alternative fuels. New industrial use of oil and gas as fuel would also

be generally prohibited. Existing facilities with coal burning capability would be required to convert to coal or other fuels, with certain exceptions for environmental and economic constraints. Those facilities without coal conversion capability which are currently burning gas could be required to convert to oil or other fuels. Utilities and industries located on United States islands would be exempt from these requirements.

These regulatory proposals closely resemble a bill sponsored by Senators Jackson, Humphrey, and Randolph. The Administration looks foward to working closely with them to develop an effective fuel conversion program.

Environmental Policy

Achievement of a clean and healthful environment is one of the top priorities of the National Energy Plan. Rising energy demand will place stress on the quality of the Nation's air, water, and land unless adequate protective measures are taken. There should be no doubt that the Administration will pursue a policy that prevents further derterioration and leads to continued improvement in environmental quality.

A strong, but consistent and fair, environmental policy can provide the reasonable certainty industry needs to make investments in energy facilities. Uncertainty about the Government's environmental policy has stifled the demand for coal in particular. There has been controversy as to whether permanent emission controls would be required, what protection is needed in currently clean areas, and whether stack gas scrubbers are technically and economically feasibile. The time has come for the Federal Government to take a clear position on these issues.

The Administration has set forth its position on Clean Air Act requirements. First, it supports legislation requiring installation of the best available control technology in all new coal-fired plants, including those that burn low sulfur coal. Second, the Administration supports the concept of protecting areas with clean air from significant deterioration. Under the Administration's proposals, States would be encouraged to classify land into categories to protect against significant deterioration of air quality as quickly as possible, and no later than two years after enactment of the Clean Air Act amendments. The States would have to decide whether new facilities meet significant deterioration

emission limits, or change the standard applicable to specific lands on which it is proposed to construct new facilities within 120 days of receiving an application for a construction license. States could no longer leave development decisions in limbo for years.

In general, the Environmental Protection Agency's current policies allowing offsetting pollution trade-offs for new installations appear to be sensible. Nevertheless, more analysis is necessary to determine the impact of these policies on expansion of key industries and on jobs and the economy. Accordingly, the Congress should not write into law a definitive formula dealing with significant deterioration until the Environmental Protection Agency's analysis has been completed. (In the interim, a provision allowing a Governor to waive ambient air quality standards temporarily to meet extraordinary social and economic needs would be in order. If the Congress enacts such an amendment to the Clean Air Act, care must be taken that it not become a loophole. Rather, it must be used sparingly in cases where significant economic and social values are in jeopardy and the harm to human health is minimal.)

To provide an incentive for coal conversion investments, a one year tax write-off would be allowed for expenditures incurred to meet emission standards higher than those in effect when a plant was constructed. This provision would be available for 10 years after the plant began operation.

Despite these measures, uncertainty will continue over the environmental impacts of increasing numbers of coal-burning plants, even ones equipped with the best available control technology. (Accordingly, the President will appoint a special study committee to review the health effects of increased coal production and use, and the environmental constraints on coal mining and on the contruction of new coal-burning facilities. The committee will report to the President by next October. In addition, the President has requested almost $3 million to study the long-term effects of CO_2 from coal and other hydrocarbons on the atmosphere. That study should assist the committee in its review.)

Coal Research

Historically, the United States has spent billions of dollars on nuclear research, but only a small amount on

coal research. This allocation of resources is ironic since coal will be required to meet the greatest portion of increased energy needs and since it has the potential to create serious environmental problems unless care is taken. The President has proposed a major expansion of the Government's coal research and development program. It will focus primarily on meeting environmental requirements more effectively and economically, and will seek to expand the use of coal for gas and liquid products. A vigorous coal research program is clearly needed in order for the Nation to make full use of its most abundant fuel resource.

In the short term, most coal will be burned directly. Hence, the highest immediate priority is development of more effective, economical methods to meet air pollution control standards. A broad range of flue gas desulfurization (FGD) systems ("scrubbers") is under development. Some are or shortly will be in commercial use. The Government will continue to study and assist industry in overcoming generic operating problems in this equipment. Work will continue on other FGD technologies that are in the research, development, and demonstration (RD&D) stage. The Government will make a six month review to determine whether these new

technologies offer sufficient environmental, reliability, and cost advantages to justify accelerating the RD&D program.

In many situations, front-end coal cleaning by grinding and washing can reduce the free sulfur content and thereby cut the cost of meeting environmental standards. Accordingly, the Government will expand its current research and demonstration program for coal cleaning to meet sulfur oxide standards more economically.

.vent refined coal processes use chemical means to remove even more of the sulfur content. The Government is prepared to move with dispatch in beginning the design and construction of a commercial demonstration size solvent refined coal plant in late fiscal 1978 if, as expected, pilot plant technical feasibility is demonstrated this summer.

Pursuant to the Administration's budget revisions in February, the Government is proceeding with demonstration projects to develop and commercialize techniques for deriving low BTU gas from coal. Low BTU gasification processes would produce a coal-derived industrial quality fuel that avoids the need for back-end SO_x and articulates control. Low BTU gasification can be a major aid in meeting coal conversion objectives.

In the long run, synthetic gas produced from coal will provide substitutes for declining natural gas supplies. The Federal role in this process is research, development, and demonstration, and commercialization of new technologies, but not subsidization of existing technologies. The Government will pursue an active RD&D program for second generation high BTU coal gasification systematically but with a sense of urgency, in order that the new technology will be ready when needed.

Technology for producing synthetic crude oil is not as well developed. An active RD&D program, including pilot plant tests, will be pursued.

The overall coal program proposed by the President would cost the Federal government $590 million this fiscal year and about $4.5 billion during the next decade. If these funds are not spent and if new coal technologies are not developed, the pressure on dwindling oil and gas supplies will increase even more. The new coal technologies are critical to the National Energy Plan, both as additional sources of new fuel supply, and as an immediate aid in switching from scarce to abundant resources.

Federal support is also required for improvements in coal mining technology. Improved mining techniques could save health and lives and make production more efficient. The Federal Government proposes to demonstrate in a model underground mine the integration of the most advanced mining technologies available, mine health and safety techniques, and environmental controls. This program will require $5 million in fiscal 1978. An expenditure of _____ million will be requested over the next _____ years for the Energy Research and Development Administration coal mining technology program.

NUCLEAR POWER ← How many plants now?

As discussed in Chapter II, the Nation faces an energy deficit, particularly for electricity generation. Even if coal could fill the deficit, a strategy of meeting all new electricity baseload needs from coal plants would entail very serious health and environmental risks. Therefore, although nuclear power is the supply option of last resort, its use will increase substantially. Nuclear power could provide as much as 20 percent of United States electricity needs by 1985, up from 10 percent today. About 75 additional nuclear plants now planned or in construction should begin operation by 1985.

The Plan addresses questions of nuclear proliferation, safety, licensing, and storage.

Proliferation

The major problems of nuclear power can be divided into those that arise from the plutonium economy and those that do not. Any part of the nuclear cycle that results in weapons grade plutonium creates a risk of proliferation of nuclear weapons capability, for plutonium can be fabricated into bombs. It can be produced from the reprocessing of spent fuel rods from existing light water reactors or from the operations of a breeder reactor.

The current light water reactors do not contain material that can readily be made into nuclear bombs. To make a bomb from the spent fuel rods of a light water reactor would require the handling of highly radioactive materials by trained personnel in sophisticated facilities.

The greatest immediate proliferation threat would occur from the development and spread of commercial reprocessing technology, which removes fission products from spent fuel, thereby obtaining reusable uranium and, in the process, separating out plutonium. Reprocessing is neither

economically necessary nor desirable at this time. Current domestic supplies of uranium are adequate to fuel a light water reactor economy of 300 to 600 plants. The economics of reprocessing are marginal at best, and the attendant proliferation risks are great. The Plan does not contemplate that reprocessing will be available at any time in the foreseeable future. Should the decision be made to proceed with reprocessing at some time in the future, it would most likely be performed by the Federal Government.

The President's revisions of the Ford Administration's budget indicated that a review would be undertaken of the future of the Clinch River Liquid Metal Fast Breeder Reactor Demonstration Project. That review, conducted within the Government with the assistance of an outside advisory committee, has been completed. Based on the very high cost of this project, the economics of fast breeder systems generally, a variety of technical considerations, and the signal that continuation of this project would give with respect to United States intentions toward reprocessing, the President has cancelled the project. The United States hopes that this action, together with its actions on reprocessing, will encourage other nations to pause in their

Cancelled

movement toward the plutonium economy and to examine alternative ways to meet their future nuclear power requirements.

If the United States' non-proliferation effort is to be successful, the United States must restore confidence in its willingness to supply enriched uranium services, thus reducing the pressure for other nations to build their own enrichment and reprocessing facilities. To achieve that end, the United States is reopening the order books for enriched uranium services, which were closed unnecessarily several years ago as part of a Government effort to devolve uranium enrichment business to the private sector. The President has also proposed legislation to guarantee the sale of enrichment services to any country which presents its order and agrees to comply with necessary safeguards. This important legislation should significantly reduce the current impetus for the spread of enrichment and reprocesing facilities.

The fiscal 1978 budget contains $500 million for an add-on facility to the existing gaseous diffusion plant at Portsmouth, Ohio to meet enrichment capacity requirements. Since the more advanced centrifuge technology is now

available and economically attractive, the Energy Research and Development Administration will seek to reprogram funds from the Portsmouth add-on to a centrifuge plant. In addition to being able to enrich uranium more efficiently, a centrifuge plant uses only 5 to 10 percent as much electricity as a diffusion plant of equivalent capacity.

By cancelling the breeder reactor and discouraging the spread of the plutonium economy, the Plan seeks to avert the most serious dangers of proliferation that arise from nuclear power.

Domestic Nuclear Safety

To enhance domestic nuclear safety, the Nuclear Regulatory Commission should expand its special audit and inspection corps to provide much more on-site inspection at nuclear plants. Additional unscheduled reviews of nuclear facilities would further strengthen enforcement. The Nuclear Regulatory Commission has already increased both the number of guards at plants and the training that guards receive.

The President has also proposed the establishment of siting criteria for location of new nuclear plants. The criteria would contain guidelines to prevent siting in densely

populated areas, under geological or other conditions that are potentially hazardous, and in valuable natural areas.

(General reform of the nuclear licensing process is clearly needed. The present process satisfies no one -- not the industry, not the intervenors, nor the Federal Government. Somehow, decisions on nuclear power plants must be made without rooms full of records and years of procrastination, confusion, and passing the buck between the States and the Federal Government and from one Federal agency to another. Consequently, the President has directed his Special Assistant for Energy, the Office of Management and Budget, the Federal Energy Administration, the Environmental Protection Agency, and the Nuclear Regulatory Commission to conduct a thorough study of the entire nuclear licensing process. The purposes of this study will be to reduce delays, clarify responsibilities, and protect to an even greater extent the health and safety of the American public.)

Storage

New methods of spent fuel storage will enable most utilities to double or triple their current storage without

constructing new facilities. In addition, the Energy Research and Development Administration is currently conducting a study to determine a suitable site or sites for the construction or expansion of long-term spent fuel storage facilities. A high level waste disposal system must also be developed and proven. The Energy Research and Development Administration is developing alternative waste disposal systems for a decision by 1978, with completion of upgraded storage facilities by 1985. The President has directed his Special Advisor on Energy to conduct, in conjunction with the Energy Research and Development Administration, the Council on Environmental Quality and the Environmental Protection Agency, a thorough review of the Federal government's waste disposal program. Full opportunity will be afforded for public participation in the review.

* * *

In sum, the United States Government's nuclear policy is to disassociate light water reactors from the plutonium economy, and to defer the latter indefinitely. Discouragement of reprocessing abroad, and improvement of nuclear safety,

licensing and storage at home should permit nuclear power to fill the gap in United States energy supply safely, and without undue risks of proliferation.

OIL AND NATURAL GAS

In recent years, natural gas production and oil production in the lower 48 States have declined. Those declines will continue to accelerate unless present pricing policies are changed. The Plan's oil and gas pricing proposals, discussed at pages _____ through _____ above, are designed to stimulate new production of _____ million barrels per day of oil and _____ trillion cubic feet per year of gas by 1985, but oil and gas policy must address other issues as well.

Alaskan Oil

By the end of 1977, the Alaska pipeline terminal in Valdez, Alaska, will be receiving approximately 1.2 million barrels of oil per day. The capacity for absorbing additional crude oil on the West Coast is no more than 600 thousand barrels per day, leaving another 600 thousand barrels of Alaskan oil as surplus.

Decisive Federal involvement will be necessary to assure expedited construction of the best project or combination of projects for moving Alaskan oil surplus from the West Coast to inland markets where it is needed. A Federal project coordinator has been designated to expedite projects within the United States and to consult with the Canadian government to encourage timely Canadian consideration of projects that could be constructed in that country.

The United States government will undertake exploratory discussions with the Canadian and Japanese governments on the possibility of short-term swapping agreements for Alaskan crude. Under such arrangements, for example, Japan might receive Alaskan oil in exchange for Persian Gulf oil that would otherwise go to Japan. Swapping arrangements could save $400 million in transportation costs compared to shipping Alaskan oil to the Gulf Coast through the Panama Canal. Any such exchanges would be limited strictly to the period before the completion of pipeline projects to move Alaskan crude to Northern Tier States, the Gulf Coast, or mid-continent refiners.

Legislation will also be sought to limit production from Elk Hills Naval Petroleum Reserve to the ready reserve level of

Save this?

80 thousand barrels per day, until the west-to-east transportation systems for moving the West Coast crude surplus are in place.

Pursuant to the Energy Policy and Conservation Act, North Slope oil production will be included in the average domestic composite price, and subject to the $11.28 upper-tier wellhead price without any entitlements treatment for delivery in the United States. This action will grant maximum incentives to North Slope producers. It will also allow an increase in lower 48 oil prices since a large volume of new Alaskan oil will be moving into the composite average at a wellhead price considerably below the current average. However, the Administration will not raise prices to producers except at the rate of inflation, and will not use its statutory price flexibility to increase domestic oil prices significantly. Producers of oil in fields yet to be discovered in Alaska will be entitled to the highest tier oil price.

Shale Oil

Billions of barrels of oil may someday be recovered from shale deposits in Western States, if environmental and economic problems can be overcome. Several private firms

have announced that they believe they can overcome these problems, and that they are prepared to proceed with shale oil development. These commercial ventures should provide valuable information about the viability of a shale oil industry.

Because of the high risks and costs involved in shale oil development, the Government should establish a price level that provides adequate incentives to producers. Accordingly, the President has reaffirmed the present pricing policy for shale oil: it will be entitled to the same price as oil from stripper wells, namely, the world price of oil.

Liquified Natural Gas (LNG) Policy

The Energy Resources Council in the previous Administration proposed guidelines to limit imports of liquified natural gas to 2 trillion cubic feet per year. Of that, no more than 1 trillion cubic feet could be imported from any one country. Applications for LNG contracts now pending before the Federal Power Commission already approach the 2 trillion cubic feet limitation, with over 1.2 trillion cubic feet proposed to come from Algeria. Ex-Im Bank subsidized financing and Maritime Administration construction

subsidies have been critical to making many of the major projects proposed to date economical.

Because of its extremely high costs and safety problems, LNG is not a long-term secure substitute for natural gas, particularly if Federal subsidies are necessary to make it viable. It can, however, be an important supply option between now and the mid-1980's, when alternative natural gas supplies may become available.

The previous Energy Resources Council guidelines are being replaced with a more flexible policy that sets no upper limit on LNG imports, but requires an end to all Federal subsidies of any such projects. The Federal Power Commission should analyze on a case-by-case basis the reliability of the selling country, the degree of American dependence such sales would create, the safety conditions associated with any specific installation, and all costs involved, including subsidies. This action could add as much as 500 billion to 1 trillion cubic feet annually to U.S. gas supply over the next critical five years without making an open-ended commitment for large volumes of this expensive resource.

The new policy also provides for distribution of imports throughout the Nation, so that no region would be seriously affected by an embargo. American bargaining leverage would be increased by conditioning Federal Power Commission certification on a United States right to cancel a contract. Finally, the President has proposed the development of strict siting criteria that would foreclose tanker dockings in densely populated areas.

Synthetic Natural Gas (SNG) Policy

The Nation's current policy toward synthetic natural gas made from petroleum is unsatisfactory. Existing regulations favor the allocation of naptha and other potential SNG feedstocks to the petrochemical industry, rather than to utilities. This policy has discouraged the construction of new SNG plants. Yet, the 12 SNG plants that were operating this winter provided an additional natural gas supply that kept several areas of the country from shutting off residential users during the coldest months.

The Federal Energy Administration's regulations will be revised to provide a priority for SNG feedstocks. This regulatory change will give pipeline companies and

utilities the reasonable certainty they need to make investments in this short-term source of gas supply.

SNG plants could be contributing as much as 1 trillion cubic feet of additional gas by 1980, before the arrival of Alaskan gas and coal-derived synthetics, and before major increases in natural gas supply as a result of the Plan's proposed price reforms.

New Sources of Natural Gas

The President has proposed substantial additional funding for two projects that may produce considerable quantities of natural gas in the near term. Within the next 3 years, 250 wells will be drilled to determine whether the natural gas found in Eastern Devonian shale deposits can be commercially developed. These deposits are located near major demand centers that were hard hit by the natural gas shortages this past winter.

In addition, the drilling program in the geopressured zones along the coast of the Gulf of Mexico will be significantly accelerated. These zones may contain enough dissolved methane to double the Nation's reserve of natural gas. They could provide additional energy in the form of

pressurized hot water. The proposed drilling program is designed to provide by 1980 a reliable assessment of this resource as well as a small flow of usable gas.

Gasoline Decontrol

Gasoline allocations and price controls are another major area of unsettled oil policy. Gasoline prices have never reached their allowable controlled ceilings, and marketers have contended for some time that deregulation of gasoline would increase competition by allowing them to shop among suppliers. There is little question that gasoline allocation and price controls have distorted what had been a very competitive market.

The Federal Energy Administration will eliminate gasoline price controls and allocation regulations at the end of the peak driving season this coming fall. Controls will be reimposed if prices rise above _____. This proposal will permit the elimination of controls while protecting consumers.

Imports

In 1976, United States oil imports averaged 7.2 million barrels per day. The Nation is now, in 1977, importing

more than 9 million barrels of oil per day, or about 44 percent of current consumption. This level of imports makes the United States vulnerable internationally; and if an oil embargo were to occur, it would have drastic impacts on the economy. The measures proposed by the President would reduce energy demand by 4 million barrels of oil equivalent per day through conservation and would reduce demand for oil and gas by 3 million barrels of oil equivalent per day by coal conversion by 1985. As a result, imports of oil in 1985 would be about 6 million barrels of oil per day. The United States would still be far from invulnerable to a new embargo, unless additional measures were taken.

As explained in Chapter III, the sensible policy goal for oil imports is relative invulnerability, not independence. Oil is imported because even at the high prices set by OPEC, it is cheaper than synthetic or enhanced recovery fuels. To eliminate imports would be to sacrifice an economic benefit of major proportions. Moreover, by substituting for domestic production, and by obviating the need for massive development of all energy sources simultaneously, imports help maintain the quality of the Nation's

environment. The United States has no reason to pay the very high costs of trying to achieve energy independence. Even if the United States itself were independent, its allies could not be, and the United States would have to assist them in the event of an international oil shortage.

The key to a tolerable level of oil imports lies in reducing the Nation's vulnerability by means of an adequate strategic oil reserve and contingency plans. The reserve must be large enough to impose unacceptable revenue losses on countries conducting an embargo, and to enable the United States to deal diplomatically or otherwise with the cause of any embargo or other supply interruption. If the United States could endure an embargo for a year, it is very unlikely that any nation or combination of nations would impose one. Accordingly, the strategic petroleum reserve will be expanded from the currently projected 500 thousand barrels to the one billion barrels authorized by the Congress. Assuming certain conservation measures would be undertaken during an embargo and assuming that a number of OPEC and non-OPEC nations would not honor it, the reserve would need to supply 3.3 million barrels per day. Under these assumptions, a one billion barrel reserve

would last about 10 months. It might last a longer or shorter time, depending on the operation of the International Energy Program. Although the reserve will cost $15 billion, it is an excellent investment, even on purely economic grounds, since the price of oil will probably at least rise as fast as the general rate of price increases. Of course, if an embargo should occur or if the strategic oil reserve deters an embargo, it would easily pay for itself. The 1973 oil embargo cost the economy some $10 to $20 billion dollars in lost gross national product.

An effective anti-embargo policy also requires contingency plans. The Administration is transmitting to the Congress a rationing plan and six demand restraint plans to be available in the event of a national emergency resulting from an embargo or other supply interruption. It is not pleasant to contemplate implementation of any of these plans. Their impacts on particular industries and sectors of society would be severe. But they would be implemented only under conditions of extreme national emergency, when substantial sacrifices in the national interest would be justified. In addition, the Administration is accelerating the preparation of four additional contingency plans. The ten plans together will reach all sectors of American life -- industry,

commerce, transportation, residences, and the public sector. Should a national energy emergency occur and the plans have to be invoked, the burdens would be shared widely and fairly among all Americans.

CHAPTER VII

THE NATIONAL ENERGY PLAN: ALTERNATIVE SOURCES OF ENERGY, AND RESEARCH, DEVELOPMENT, AND DEMONSTRATION

Alternative energy sources are America's brightest hope for the energy future. Solar energy in particular is inexhaustible and clean, and can be used in dispersed settings as well as in central stations. However, the various solar and geothermal technologies today face technological, economic and institutional barriers that could prevent them from making major contributions in this century. Nevertheless, some of the alternative technologies can make a measurable contribution in the medium term or even in the near term if aggressive steps are taken now to promote them.

Solar Energy and its Derivatives

Technology for solar hot water heating and space heating is ready for commercialization now. The primary need is for a temporary Federal incentive to stimulate the development of a large solar market. Therefore, the President has proposed a tax credit starting at 40 percent of the first $1,000 and 25 percent of the next $6,400 (maximum $2,000) paid for installation of solar equipment. The credit program would last for six years, and the amount of the credit would decline in stages to

25 percemt pf tje forst $1,000 amd 15 percent of the next $6,400.

This incentive should help launch the solar home heating industry. The Plan would help the industry in other ways as well. Federal mortgage assistance programs would be revised, where necessary, to accommodate solar homes through increased loan ceilings and similar measures. The results of the ERDA solar demonstration program and the performance standards developed by the Department of Housing and Urban Development should provide a basis for warranties, insurance and mortgage valuations. Finally, the Federal government will demonstrate its confidence in solar technology by undertaking a five year, $200 million solar program for Federal buildings.

The States can also support the national interest in widespread use of solar energy. A number have already amended their property tax laws to exempt solar installations from assessments. The President will encourage other States to do so as well. The States can make a further contribution to the national interest by enacting legislation to protect access to the sun and by promoting consumer education in

the solar field. Under the proposed utility reform program, utilities would not be abel to establish rates that discriminate against solar energy systems.

Solar energy can also be used to generate electricity. The solar electric technologies are in varying stages of development. Photovoltaic systems, using cells developed in the space program, are economic today for certain small,decentralized applications. They have a potential for dramatic price reductions that would make them economic for a broader range of applications. Longer term development is proceeding on central station solar electric power systems. Collection of solar energy by space satellites is a long-term possibility if technical, economic, and environmental problems can be solved.

The technologies using wind, biomass, and ocean thermal conversion can make regional contributions in the medium term. Wind systems can supply energy to small utilities, hydroelectric systems, and dispersed users of power. Agricultural and forestry residues ("biomass") already produce energy, and that production may be increased by improved collection methods and by energy farms. Ocean

thermal systems, which would use the temperature difference between the solar heated ocean surface and the colder depths to generate electricity, require further technological development.

Municipal solid waste is an attractive energy source because its use for energy production also helps to solve environmental problems and may reduce long-term municipal disposal costs. Energy can be obtained from municipal solid wastes both through direct combustion and through systems of converting these wastes into liquid, gaseous, and solid forms of energy. Greater use of energy recovery systems have been hindered by the availability of cheap open dumps and by technological and institutional difficulties. However, some plants using solid waste or producing fuel from it already operate successfully, and present barriers to more widespread use should be overcome with time.

The Plan's fuel conversion program would provide incentives for use of biomass, municipal solid waste, and fuel derived from it, as well as coal. The requirement that industries and utilities shift away from oil and gas, the provision of tax credits for investments in facilities to burn biomass,

solid waste, and refuse derived fuel, and the well known environmental problems associated with coal combustion should lead businessmen to take a close look at the advantages of burning these alternative fuels.

Finally, the proposed research and development package, discussed below, includes proposals to increase funding for research and development relating to biomass combustion, photovoltaic systems, small wind systems, solar space cooling and other solar buildings technologies, and low head hydropower turbines.

Geothermal Energy

Geothermal energy, the natural heat in the earth's crust, has large potential for direct thermal use and for electricity generation, particularly in the Western states. It occurs in many forms, only one of which is currently used to a significant extent. Geothermal steam from The Geysers in California provides more than 500 MW_e for the City of San Francisco. Hydrothermal (liquid-dominated) sites are found throughout the West, some at high temperatures adequate for electricity generation, and others at lower temperature suitable for heating of buildings. At

present, several hundred buildings use geothermal heat. With expected technological progress, hydrothermal sources should begin to make a significant contribution in the 1980's. Geopressured resources, located along the Gulf Coast, contain potentially significant amounts of hot water and dissolved methane, which may become accessible in the 1980's. Hot dry rock, magma (molten rock), and normal gradient heat may be significant sources of energy in the 1990's and beyond.

To stimulate geothermal drilling, the President has proposed to provide for it the same tax deduction of intangible drilling expenses as is now available for oil and gas drilling. The purpose of this proposal is to bring about equality of treatment among activities which compete for capital. The value of the intangible drilling expense deduction generally will be reviewed as part of the President's tax reform program.

To encourage direct thermal uses of geothermal energy, the proposed tax legislation would provide investment tax credits for industrial installation of geothermal systems and for the establishment of direct thermal distribution systems.

The proposed research and development package contains substantial additional programs to evaluate the Nation's geopressured, dry steam and hydrothermal resources and to promote the use of geothermal energy in non-electrical applications.

Finally, the Forest Service and the States are encouraged to streamline their leasing and environmental review procedures to remove unnecessary barriers to development of geothermal resources.

Research, Development and Demonstration

A strong Federal research, development, and demonstration (RD&D) program is indispensable for the development of future energy supplies. In its revisions of the fiscal 1978 budget, the Administration began the process of reorienting the Nation's RD&D priorities to meet its real needs.

Government-supported RD&D should encompass not only scientific and technological research, but also commercialization--the movement of energy developments from the laboratory to the marketplace, where they can be of practical use. The

Department of Energy Reorganization bill would create a new structure that combines scientific and technological research with commercialization. Before the Nation embarks on costly research projects, it should have the best possible information on prospects for economic success and institutional acceptance as well as technological progress.

However, commercialization activities, and in particular commercial demonstration projects, must not become a hidden subsidy of technologically feasible but economically uncompetitive technologies. Nor should the Government support particular private sector projects except where the national interest will clearly be served. And where subsidies are required they should be awarded in an open process that is responsive to national priorities.

The cancellation of the Clinch River Project demonstrates that the Government's support of preliminary feasibility studies and pilot plants does not constitute a commitment to subsequent support of technologies that do not meet criteria for technical success and the test of the marketplace. By making this demonstration now, the Government should find it easier henceforth to support multiple,

parallel technological options in their early stages without drifting unwittingly into a long-term guarantee of support for further project development. Recognition that early Government support really is not a blank check for the future should benefit the Nation's entire RD&D program.

In accordance with the new National priorities set forth in the National Energy Plan, the President has proposed to spend in fiscal 1978 $113.9 million for additional research and development projects, plus $20 million for a new Office of Appropriate Technology, beyond amounts already proposed in the revised fiscal 1978 budget.

The Administration's revised fiscal 1978 budget proposed a doubling of expenditures for conservation. The President has now proposed two additional conservation projects. To demonstrate the Federal government's commitment to waste heat utilization, the Energy Research and Development Administration's gaseous diffusion plants will recover the waste heat they now produce and supply it as electrical, mechanical or heat energy to homes, farms and industry. To conserve natural gas, the Government will also fund programs for gas-fired heat pumps and small fuel cells for residential and commercial heating and cooling.

Two programs may add significantly to the Nation's near-term natural gas suply. The Government will provide substantial additional funding to accelerate the investigation of methane recovery from the geopressured zones along the Gulf Coast and gas from Eastern Devonian shale. These projects are described at pages ___ and ____ above.

The Government will add several initiatives to its already extensive coal research program to support the Plan's emphasis on increased use. The research program is described ob pages ___ and ___.

The Government will provide increased funding for solar cooling and allied solar technology and for small wind energy conversion systems. It will also support projects to demonstrate the use of wood-derived biomass as a substitute for fuel oil, and the use of low head turbines on existing small dams. These projects could yield significant regional benefits.

Two new initiatives are proposed for geothermal energy. Additional funding will be provided to identify new sources of hot dry steam and liquid dominated sources which could be used in near-term generation of electricity. The Government

will also support demonstrations of direct uses of geothermal energy for residential space conditioning and industrial and agricultural process heat.

Two environmental research projects will also be undertaken. The effects of increased carbon dioxide on the environment and the environmental-efficiency tradeoffs in the transportation sector will both be studied.

Finally, a new Office of Appropriate Technology will fund small, innnovative projects that normally fail to receive Government support. It will thereby enable individuals and small businesses to contribute to the Nation's energy research and development program.

This additional research and development program focuses on projects with both near term and long term potential. It emphasizes small, dispersed and environmentally sound production and use of energy, particularly renewable energy. It is regionally and sectorally balanced. And it seeks to redress the advantage enjoyed by big business in the Government's current research and development program.

CHAPTER VIII

THE NATIONAL ENERGY PLAN: THE ROLE OF GOVERNMENT AND THE AMERICAN PUBLIC

It is plain from the foregoing sections of the Plan that government at all levels has a strong role to play in determining the course of energy production and use. Beyond the specific programs discussed previously, the Federal Government faces four major tasks: to organize itself to administer national energy policy, to establish clear national energy goals, to obtain more useful energy information than is now available to it, and to monitor the competitive performance of oil and natural gas companies. State and local governments will also assume major new responsibilities in cooperation with the Federal government. Non-governmental organizations and individuals also have a vital role in the success of energy policies.

THE DEPARTMENT OF ENERGY

The initiatives called for in the National Energy Plan underscore the importance of the creation, at the earliest possible date, of a Department of Energy. Legislation to create this Department has been sent to the Congress by the Administration, and hearings have been held in both the House and Senate on the Administration's proposal.

Creation of the Department of Energy is a necessity if the elements of the Plan are to be carried out in a coherent and effective manner. The Plan proposes a unified policy. The Department would carry out this policy through a single organization that would coordinate and manage energy conservation, supply development, information collection and analysis, research, development and demonstration, and energy regulation. Only through creation of the Department will the Nation obtain the organizational coherence needed to meet the goals of the National Energy Plan.

By consolidating more than 100 of the most important energy data collection programs in the Federal government, the Department of Energy would provide the Nation with energy

information that is reliable and comprehensive. An Energy Information Administration within the Department would organize and analyze the information so that it could be used by Government, industry, and the public for maximum public benefit.

In addition, the ability of the Federal government to regulate competitive fuels rationally and in accordance with the National Energy Plan would be significantly enhanced by unification of most of the major governmental energy regulatory responsibilities in the Department of Energy. When market forces do not suffice, the Department, operating within Congressional mandates, would be able to use the regulatory tool far more effectively than it has been used in the past, when agencies operated in isolation and at cross-purposes.

The Department of Energy would enable the Nation for the first time to coordinate its research and development activities with a policy planning process that takes full account of the importance of conservation and near-term resource development. The Department would be the most

effective means for ensuring that the priorities established in the National Energy Plan are translated into the Government's ongoing research and development efforts.

Finally, by combining the conservation activities of various agencies, the Department would be in a position to ensure that the strong emphasis of the National Energy Plan on fostering genuine conservation will not be frustrated by a mass of competing, conflicting, and overlapping jurisdictions in the Executive Branch.

These activities and many others would be united within the Department of Energy. For the first time, national energy policy would be carried out by an agency equipped to examine all the relevant factors comprehensively, and to combine the diverse skills of many specialists now dispersed through numerous federal agencies.

The need for establishment of a Department of Energy is urgent. If the National Energy Plan is to be implemented successfully, the organizational structure should be put in place quickly, to ensure that the coherence of the Plan is complemented by an effective organization to execute its program.

NATIONAL ENERGY GOALS

A national energy plan is not something that can be adopted and then forgotten. There is no quick or easy solution to the energy problem. The re-orientation of American society to the newly perceived energy realities will occur only as a result of a multitude of measures over many years. An important part of the Plan is a proposed Joint Congressional Resolution adopting specific energy goals for the Nation, so that the Nation's energy progress can be monitored and assessed.

The President has submitted for joint adoption by the Houses of Congress a resolution setting forth the following energy goals to be achieved between now and 1985:

-- 2 percent annual improvement in energy efficiency, as measured by consumption per unit of GNP;
-- 10 percent decrease in gasoline consumption;
-- reduction of oil imports to 7 million barrels per day;
-- 1 billion barrel strategic petroleum reserve;

-- 400 million ton increase in coal use;

-- 200 percent increase in the contribution of renewable energy sources, such as solar energy.

If the proposed Joint Resolution is adopted, then, beginning two years after enactment of the National Energy Plan, the President will submit to the Congress biannually a report on the Nation's progress in meeting the 1985 goals. The report will recommend any changes in the existing Plan, or any additional measures, needed to meet the 1985 goals.

Information

Much of the Nation's remaining reserves of oil and natural gas are located on Federal lands and belong to the Nation's citizens. Yet, the public, the Administration, and members of Congress have very little information about the Nation's reserves or the rates at which they are being developed. Without this basic information, it is difficult to make intelligent public policy decisions concerning oil and gas.

The President has proposed a three-part energy information program, which includes a petroleum production and reserve information system, an emergency management information system, and a petroleum company financial data system.

The petroleum production and reserve information would be compiled by a joint Federal/State task force. The proposed Department of Energy would take over the audit and verification roles now performed by the American Gas Association and the American Petroleum Institute. These industry associations and their member companies would be required to open their reserve estimation process to Federal officials, who would supervise the collection and preparation of reserve data. Information collected and submitted through this process would be randomly audited at the company level.

The Management Information System would provide government with the information needed to respond to an oil embargo, a natural gas shortage, or other energy emergencies. State Energy Offices, assisted by the Federal government, would collect and maintain the data. As further preparation for electrical power shortages this coming summer and possible natural gas shortages in future winters, the Administration is formulating contingency plans for submission to the Congress under the Energy Policy and Conservation Act. Contingency plans for an oil embargo are discussed at page ____ above.

The Petroleum Company Financial Data System would require each company engaged in crude oil or natural gas production

Vertical accountability

to submit a detailed financial information statement to the Federal government. Companies would have to conform to a uniform system of accounts, and to report capital expenditures and operating results by geographical region and type of fuel. They would be required to submit information relating to functional areas, including refining, production, marketing and pipelines, and information relating to foreign as well as domestic operations. This comprehensive reporting program would enable the Government to assess the performance of the industry and individual firms. It would restore confidence in the Congress and among the American people that the Government, not the oil industry, is in charge of national energy policy.

COMPETITION

There has been great concern about the political and economic power of vertically and horizontally integrated major oil companies. The vertically integrated firms include segments for exploration, production, refining, and marketing of oil products. The horizontally integrated oil firms own coal and other energy resources. Some observers of the oil industry believe that vertically integrated firms subsidize some activities at the expense of others, and thereby destroy competition from non-integrated companies.

They believe that if the firms were broken up, there would be greater competition at all levels of the industry. Concern has also been expressed that horizontally integrated oil firms may retard the growth of coal and other alternative fuels in order to protect their oil and natural gas business.

As the Nation's oil and gas producers receive increased production incentives, the public must be assured that it receives the protection it needs from the costs of anticompetitive conduct.

Particularily because of the deep concern over the potential anti-competitive effects of major oil companies moving into the business of developing alternate and competing sources, the Plan calls for the creation of an office of competition within the Department of Energy to monitor the behavior of these increasingly influential energy firms and other problems of competition in the Nation's energy production and distribution system. If it appears that anticompetitive activity is having an adverse effect on the development or use of the Nation's energy resources, the National Energy Plan contemplates swift remedial action through the Justice Deparment as well as support for legislation requiring horizontal divestiture.

Armed with the new information gathering authorities described above, the Administration will assemble very specific profit and loss figures on every major oil company and its subsidiaries, broken down by functional areas, including refining, production, marketing, and pipelines, as well as foreign and domestic operations. This information will provide the Federal government with the analytical tools to monitor the competitive market response of the oil industry to assure that consumers are not subsidizing anti-competitive conduct, and to determine the need for vertical as well as horizontal divestiture. No change is contemplated in current law protecting the confidentiality of proprietary information submitted to the Government.

An immediate solution is required for a competitive problem that has resulted from an unintended effect of the Tax Reform Act of 1976, which changed the tax treatment of intangible drilling expenses. Some independent oil and gas producers have been deprived of a tax deduction for such expenses, while the major corporate producers continue to enjoy the deduction. The law has thus put independent producers at a competitive disadvantage and has adversely affected the rate of exploratory drilling. To remove the

current inequity, independent oil and gas producers should receive the same tax treatment of intangible drilling expenses that their corporate competitors, the major oil companies, receive. Investors who finance oil and gas exploration in order to obtain a tax shelter for income earned in other occupations should not receive such a benefit, however. Legislation has been proposed to remove the inequity without shielding income unrelated to oil and gas exploration.

STATE AND LOCAL GOVERNMENT PARTICIPATION

A National Energy Plan can be built only on a foundation of partnership and understanding among the Federal government, the States and local governments. Many of the programs proposed in the Plan will require the active cooperation of State and local governments. Their support will also be needed to harmonize the varying interests of the different regions of the country, all of which are affected by national energy policy. State and local governments performed admirably during the recent natural gas shortage, and their role in energy matters should increase in the future.

In particular, the States will play a critical role in developing a sound informational basis for energy decision-making. The States' role in creating and maintaining the proposed management information system is particularly important. That system should be of great value to both the Federal Government and the States in dealing with energy shortages such as those that have occurred or are impending this year.

The Federal government is willing to do its part to assist States and localities in coping with new energy developments, principally from coal utilization, that will occur under the Plan. Large-scale development places heavy demands on local communities for schools, roads, sewage treatment facilities and other municipal improvements. Without proper planning for such developments, small communities may be overwhelmed and may be unable to prevent serious social and environmental problems. Therefore, the President has proposed legislation to provide planning grants for communities in non-coastal areas confronted with development of major energy facilities. The legislation would roughly parallel the Coastal Zone Management Act Amendment, which provides assistance for coastal zones affected by offshore development. The new legislation would provide $50 million a

year for two years. In contrast to the Coastal Zone program, however, the funds would be available only for planning grants, not for actual construction of facilities. Inland States should be able to assist their communities to meet their investment needs from regular State sources, royalties from coal production on Federal lands, and State severance taxes.

PUBLIC PARTICIPATION

The National Energy Plan marks only the beginning of the Nation's effort to deal with the energy problem comprehensively. As the Plan's legislative proposals are considered by the Congress and as its administrative proposals are carried out through executive action, they will be subject to extensive public comment. The Administration encourages broad national discussion of the Plan and its specific elements.

The President will meet shortly with the Nation's Governors to discuss actions that the States can take to deal with the energy problem. He will meet with them again in the fall to review progress during the spring and summer. The Federal government will also sponsor additional town meetings

and other public events to encourage public comment on national energy policy. Private organizations might also sponsor seminars and meetings to consider the energy problem and how to deal with it.

But public participation can go far beyond discussion. There is much that individual Americans can do to help the country solve the energy problem. Where public transportation is available, they can use it rather than automobiles. When they do drive, they can use car pools or vanpools, and observe the 55 miles per hour speed limit.

American families can reduce the Nation's waste of energy and their own fuel bills by investing in insulation and other energy-saving home improvements, and by reducing their use of air conditioners this coming summer. Schools can help young people understand the energy problem. Employers can make conservation a high priority in incentive awards and suggestion programs.

* * *

The role of Government in the National Energy Plan is crucial. In the past, there has been some questions whether

the Government or the energy industry was making national energy policy. With the establishment of a Department of Energy, a strong program to assure competition and detailed reporting by industry, there will no longer be any doubt who is in charge.

States will play an active role in energy policy, and will receive assistance for large new wnergy developments.

The proposed Joint Congressional Resolution will provide a method to measure the Nation's progress in achieving its energy goals.

April 1, 1977

CHAPTER IX

THE EFFECTS OF THE PLAN

The effects of the National Energy Plan must be measured not only against the Nation's energy position in the recent past and present, but also against its projected position if no corrective action is taken. America's past and present energy position cannot continue indefinitely into the future. The question before the Nation is whether, to avoid the consequences of present policies, it is worthwhile to adopt the Plan, with the consequences discussed in this Chapter.

As discussed earlier, without strong Federal action, energy demand is projected to increase from 36 million barrels per day of oil equivalent in 1976 to 50 million barrels per day in 1985, a 40 percent increase. Imports would rise from over 7 million barrels of oil a day in 1976 to roughly 12 to 13 million barrels per day.

The conservation initiatives recommended in the Plan would reduce 1985 energy demand ____ percent below what it otherwise would be, and would save 4 to 5 million

barrels per day of oil equivalent. Of that amount, ____ percent would represent gas consumption. In addition to conservation, the Plan would shift _____ barrels of oil per day and _____ TCF of gas per year to coal, for a total oil equivalent saving of 3 million barrels of oil per day. Total 1985 imports projected under this program are about 6 to 7 million barrels of oil per day.

The Plan contemplates sizeable growth in the U.S. economy by 1985. This growth would be reflected in a larger population, using a large number of residences, automobiles, and manufacturing goods as shown in Table 5(1).

ITEM	1975	1985 WITH PLAN	1985 WITHOUT PLAN
GNP			
UNEMPLOYMENT			
AUTOMOBILES			
HOUSING			
MANUFACTURED GOODS			
POPULATION			

The Plan will promote jobs. Overall, it will reduce unemployment by _____ percent by 1985. The conservation program will create more than _____ jobs. The reduction of oil imports, in projected 1985 prices, would keep $_____ million within the economy. Otherwise, that money would flow overseas and take jobs with it. American jobs will also be protected from the dislocations caused by supply disruptions. Finally, by establishing a sound strategy for meeting the Nation's future energy needs, the Plan will protect the economy generally, and the working man and woman as well, from a possible future in which energy becomes increasingly scarce and its price rises astronomically.

(DISCUSSION OF OTHER ECONOMIC IMPACTS--INFLATION, IMPACT ON THE TREASURY, DISPOSABLE INCOME, INCOME DISTRIBUTION, ETC. - ANALYSIS IN PROCESS.)

The Plan will save capital for industry and commerce generally by reducing the energy producing sector's capital needs. Although the conservation program will require capital investments of $_____ billion by 1985, the energy saved would require capital investments of $_____ billion if it were to be produced from new supply. The development of solar and geothermal resources may also release capital that would otherwise be consumed by capital-intensive fuel conversion technologies. The program for conversion from oil and gas to coal and other fuels will require investments of $_____ billion, but those are investments that would have to be made sooner or later as oil and gas begin to disappear.

The Plan will protect the environment. Conservation will enable the United States to develop its domestic resources in a more orderly and environmentally protective way than would otherwise be possible. Coal development and offshore oil and gas production can proceed at a pace that will permit planning for human and environmental needs. Coal use will increase under careful scrutiny of all environmental effects. Environmentally clean renewable resources will be developed at an accelerated pace.

(DISCUSSION OF REGIONAL AND SECTORAL EFFECTS - WILL BE DRAFTED AFTER ANALYSIS IS COMPLETED.)

The Plan will provide the certainty needed for effective planning by the private sector. The Government will have an established oil and gas pricing policy. Confusion over environmental requirements will be greatly reduced. The nuclear licensing process will be streamlined.

The Plan will generally enable Americans to preserve most of their current way of life, and the American standard of living will continue to improve.

The U.S. will retain the economic benefits of oil imports without political vulnerability. As America moderates its own demand for world oil, it will provide additional time for other nations to restrain their demand and shift to other fuels before world oil production begins to peak in the last half of the 1980's.

The Plan will restore American leadership in addressing one of the world's most serious problems. The world faces a cruel dilemma: most people use very little energy because they live in dire poverty, but as standards of living rise thoughout the world, the world's resources will deplete more

rapidly. Domestic energy conservation could be one of America's most effective forms of foreign aid, for it would make available a larger portion of the world's energy for use in countries struggling to attain a decent standard of living.

Although the dramatic increases in energy prices since 1973 have caused inconvenience in this country, they have caused real suffering and overwhelming financial problems in countries that depend on the world energy market for 70 to 100 percent, rather than just 20 to 25 percent, of their energy needs. The energy crisis has undermined the financial stability of many countries. The burdens on those countries would increase even more if America's demand for world energy resources continued to grow as it has in recent years. By restraining America's effective claim on the world's energy, the Plan will help to abate the rise in world energy prices and to restore international economic stability.

The Plan will also contribute to peace. Among the fundamental causes of war is the desire of nations for secure supplies of critical raw materials. A world making

increasing demands on a diminishing supply of conventional energy resources is a world fraught with peril. The Plan bears witness to America's recognition of this danger, and to its determination to avert it.

Finally, the Plan will restore a sense of mission to the American people. Previous generations of Americans have faced major challenges--the abolition of slavery, industrialization, war, depression. This generation has discovered that it faces a challenge that is equally great--the energy crisis. Meeting that challenge will require sacrifice, hard work, and imagination on the part of all Americans. It will require a new national ethic that values energy efficiency and condemns energy waste. And it will require a degree of regional, sectoral, and person-to-person cooperation that the Nation has attained only in meeting the great challenges of the past. The prospect of America organizing to meet the energy crisis is not entirely grim. It is also exciting.

The Medium and Long Term Future

The post-1985 period will be the real test of the National Energy Plan. As world oil production declines, any failure by the oil importing countries to have restrained their aggregate demand will produce sky-rocketing prices and shortages. Savings built into the American economy and additional domestic energy production pursuant to the Plan should enable the U.S. to face the post-1985 phase of the energy transition head-on without major dislocations.

Research and development carried on during the next few years could produce much greater efficiency in vehicles, buildings and factories. It is altogether realistic to envision a period of growth for the U.S. economy for the remainder of this century, made possible by a steady reduction in the amount of energy required to drive a car, heat a home or run a factory. The lower birth rate of recent decades will also reduce energy requirements in the post-1985 period because far fewer Americans will be entering the family-forming age bracket, which creates the largest demand for housing, automobiles and energy intensive appliances.

If the programs in the National Energy Plan are adopted promptly, the Nation's energy requirement per dollar of GNP will steadily decline. The Nation can look forward to the benefits of a high energy civilization and a full employment economy with growth rates in energy consumption in the 1985 to 2000 period of approximately 1 percent annually.

The benefits of a future in which energy consumption begins to level off in this Nation are enormous. The three principal energy related problems - environment, dependence on imports, and inflation - are all alleviated by a slower growth in demand. Such a future will give the U.S. the time it needs to develop sources of supply to build a more reliable energy base for continued economic growth in the twenty-first Century.

The present and future markets for energy can be divided into three roughly equal categories. The first, transportation, is now wholly dependent on petroleum. The second, high quality energy such as electricity or high temperature steam, necessary for most industrial needs and such electrical household

needs as lighting and appliances requires fossil fuels or nuclear power. The third category is low grade heat - temperatures below the boiling point of water - which can be used to heat and cool buildings and provide about one-third of the process heat for industry. It can be produced by a variety of means.

Thus, roughly two-thirds of energy consumption requires petroleum or high-quality energy in the form of electricity. It is only the low quality energy requirements that could substantially be met by decentralized solar non-electric systems, waste heat from power plants, direct geothermal energy or other diffused and less concentrated energy sources. Over the long run, it is wasteful to use high grade energy sources, such as petroleum or electricity, for end-uses that can be satisfied by low-grade heat.

The basic strategy of the Plan is to rely more heavily on the Nation's very large coal resources, as oil and gas become increasingly more difficult to find and more expensive to produce. Research in the next decade should result in technologies to burn coal cleanly in electric

power plants and large industries, and to convert coal into synthetic gas or liquids for use in commercial buildings and homes, as well as some power plants. A variety of other energy sources-- solar, electric, biomass, municipal solid waste, and others-- would be developed to supplement coal as a source of high grade industrial heat and electricity.

Replacement of petroleum in transportation systems is a more difficult challenge. Coal can be converted to petroleum as the Germans demonstrated in World War II, but current synthetic petroleum is extraordinarily expensive, more than double the world oil price. The U.S. possesses huge shale oil resources, but their development with current technology faces a number of economic and environmental constraints. The Nation will need to pursue research and development on synthetic petroleum and shale oil in the next decade to reduce costs and deal with environmental concerns so that these sources have the potential to begin to fill the gap in the last decade of this century.

There is a sizeable market for solar and geothermal energy to supply the low quality heat that constitutes

one-third of the U.S. energy market. It is possible that by 1985 a significant share of new buildings in this Nation will be incorporating solar technology as the primary source of energy for heating and perhaps cooling. Solar energy can also begin to supply some of the low grade process heat needed by industry and agriculture. Geothermal energy, a virtually untapped but potentially enormous resource, could meet many direct needs. Both resources could also, during the 1990's, supplement the light water reactor and coal in generating electricity.

The major question for the long term future is the source of electric power. The year 2000 is a short period away in terms of the time required to develop new sources of energy. Atomic fission was discovered 38 years ago, but today provides only about 3 percent of the Nation's total energy. Experience with atomic energy teaches that the development of a new energy source is not simply a matter of technological efficiency. Assessment of an energy system's impact on mankind and the environment must be an integral part of any research and development program.

The Federal government is now pursuing a diversified research and development effort for new sources that can meet the Nation's electricity generating needs beyond the turn of the century. The major options incude the nuclear breeder technologies, nuclear fusion, and centralized solar energy.

The breeder technologies are scientifically feasible and could be made commercial by the end of the century. However, the dangers of a plutonium economy and the availability of energy alternatives for several decades dictate the direction that program should take. Alternative breeder technologies that do not raise the same proliferation concerns are in the very early stages of development. A diversified breeder research effort should be continued as an option for future energy supply, providing insurance if other alternatives fail.

Fusion power remains an enigma. If perfected, it would provide a virtually limitless source of energy. Its scientific feasibility, however, has yet to be established despite three decades of intensive research, and it brings environmental and proliferation problems of its own, which have yet to be fully evaluated. Fusion research should be

pursued in a deliberate and careful manner. Society, however, cannot depend on the feasibility of fusion power.

Solar energy is also a candidate in the race for the source of abundant energy for the future. The serious question is whether it can supply the two-thirds of the energy market that require high temperature heat or electricity. The options available are to generate electricity through photovoltaics, power plants in the desert, ocean thermal gradients, biomass or perhaps even satellites in the sky. The economics of all these options are very poor at this infant stage of development. There are also varying environmental problems with solar technologies that require evaluation.

The poor economics of solar electric today do not doom it for the future. The research and development effort has hardly begun and the costs of alternatives are going up. Moreover, conventional economics do not reflect solar's major advantages - the absence of the problems of proliferation and safety inherent in most of the nuclear technologies. Even so, it must be recognized that solar electric - as distinguished from decentralized

solar - is still a distant dream and that it, too, is not yet an option on which society can rely. In sum, the long-term future of energy in America is still open.

America's future energy supply is a central concern for all of mankind because America uses so much of the world's energy resources. Solution of America's energy problem, therefore, is a precondition for a stable world community.

The National Energy Plan provides a strong basis for the U.S. to weather the energy transition from plentiful supplies and low prices to scarce supplies and high prices. The actions taken by the U.S. must be carefully coordinated with those of all other nations. The energy crisis is probably the most serious threat facing mankind today as well as the biggest challenge. It is a challenge the U.S. government will face squarely and directly with the strong support and sacrifice of the American people.

THE WHITE HOUSE
SIGNATURE MUST BE SECURED

TO:

The Honorable Bob S. Bergland
Secretary of Agriculture
Washington, D.C. 20250

DATE 4/20/77

NUMBER 005617

TIME REC'D 12:25

RECEIVED BY L. Runyon

DELIVERED BY

RICK HUTCHESON

RETURN RECEIPT ~~ROOM 54 IN O.E.O.B.~~

THE WHITE HOUSE
WASHINGTON

to Rengland

ACTION	FYI	
		MONDALE
		COSTANZA
	X	EIZENSTAT
		JORDAN
		LIPSHUTZ
		MOORE
		POWELL
	X	WATSON

	ENROLLED BILL
	AGENCY REPORT
	CAB DECISION
	EXECUTIVE ORDER

Comments due to Carp/Huron within 48 hours; due to Staff Secretary next day

	FOR STAFFING
	FOR INFORMATION
	FROM PRESIDENT'S OUTBOX
	LOG IN/TO PRESIDENT TODAY
	IMMEDIATE TURNAROUND

		ARAGON
		BOURNE
		BRZEZINSKI
		BUTLER
		CARP
		H. CARTER
		CLOUGH
		FALLOWS
		FIRST LADY
		GAMMILL
		HARDEN
		HOYT
		HUTCHESON
		JAGODA
		KING

		KRAFT
		LANCE
		LINDER
		MITCHELL
		POSTON
		PRESS
		B. RAINWATER
		SCHLESINGER
		SCHNEIDERS
		SCHULTZE
		SIEGEL
		SMITH
		STRAUSS
		WELLS
		VOORDE

THE WHITE HOUSE
WASHINGTON

April 20, 1977

Stu Eizenstat
Jack Watson

For your information the attached was sent to Secretary Bergland today.

Rick Hutcheson

Re: Chestnuts

THE WHITE HOUSE
WASHINGTON

4-20-77

To Bob Bergland

Please take a personal interest in this & keep me informed.

Jimmy

NEW, YORK TIMES
4/20/77

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DISCOVERY OF BLIGHT MAY AID CHESTNUTS

Low Virulence Fungus in Michigan Is Found to Nullify the Effects Of the Lethal Strain

By WALTER SULLIVAN
Special to The New York Times

The alertness of a tree-lover while skiing cross-country through Michigan woods has, for the first time, disclosed the presence in this country of a native strain of chestnut blight that nullifies the effects of the lethal strain.

The discovery has further raised hopes that such strains can be used to bring back what were once among the noblest trees in American forests.

In February 1975, Mrs. Robert D. Johnson, then of Ann Arbor, read in a report by The New York Times News Service of research at the Connecticut Agricultural Experiment Station in New Haven on a low virulence strain obtained from Europe.

Having mourned the gradual fading of American chestnuts as they succumbed to the blight, she clipped the article from The Ann Arbor News and brought it along when she moved to Rockford, Mich.

The following winter, on a ski run, she spotted some chestnut sprouts whose bark "looked tortured," she said in a telephone interview this week. She had never seen a chestnut like it before. While a few gray ghosts of great girth can still be seen in the forests as relics of chestnut magnificence, the only live trees are shoots from old roots.

Nuts Trying to Ripen

These become infected with the blight fungus that forms a canker on the bark that kills the shoot before it can gain maturity. But here, Mrs. Johnson said, the tree was bearing burs as though trying to ripen the nuts for which such trees were once famous (nuts sold on street corners are usually from European chestnuts).

On the slim chance that this might indicate a low virulence strain, she sent to the Connecticut station a bark specimen with a canker that seemed to be healing. Last August, she provided 10 more samples. Roughly half of them proved to be of low virulence.

This week, experimenters from the station told a workshop on forest pathology of their efforts to explore the usefulness of such strains. The workshop was sponsored by the United States Forest Service in cooperation with the Yale School of Forestry and Environmental Studies and the experiment station. It was held at the Holiday Inn in New Haven.

Dr. John EElliston, a plant pathologist working on the problem at the station, presented the findings so far. He and Dr. Richard A. Jaynes suspect that the low virulence fungus cmarries a virus that weakens its destructiveness.

Loss of Virulence

When this fungus is inoculated near a canker of the lethal variety, the latter loses its own virulencme, implying that it it becomes infected with the same virus.

The virus itself has not been isolated, Dr. Elliston said in an interview, but the cankers have been found to contain a form of DNA typical of viruses that attack fungi. DNA (deoxyribonucleicm acid) is the genetic component of a virus that does the damage.

If a viral infection of the blight fungus could be made to spread throughout American forests, the battle might be won, but so far the infection has traveled at only a snail's pace.

In the experiment station's research, trees whose cankers have been "cured" by inoculation with low virulence fungus may still carry thriving cankers of the lethal variety elsewhere on the tree. The low virulence is thus not very contagious.

Strains Travel Slowly

For this reason the discovery of low virulence fungi in the heart of the continent is important as an indicator that such strains can travel, or evolve, despite such low contagion. French reseachers have found that the low virulence fungus spreads only about 10 yards in four or five years. However, in Italy, where it was first observed in about 1951, it seems to move faster.

Since Mrs. Johnson's discovery, unusual specimens have been received from elsewhere, such as Virginia. Their effectiveness has not yet been tested, but the DNA content of some strains seems to vary in a manner suggesting that more than one virus may be involved. As early as 1917, Dr. Elliston said, there were reports of trees that seemed to fight off the disease, at least for a while.

One solution, he added, would be to find a vector, such as an insect, that could help spread the virus that might save the chestnuts, just as the Dutch elm bark beetle carries the fungus that kills elms. Another would be to manipulate the [illegible] of the fungus to make it more [illegible]

THE WHITE HOUSE
WASHINGTON

April 20, 1977

Jim Fallows -

The attached was returned in the President's outbox. It is forwarded to you for appropriate handling.

Rick Hutcheson

Re: Material for Future Message from Bert Lance

THE WHITE HOUSE
WASHINGTON

ACTION	FYI	
		MONDALE
		COSTANZA
		EIZENSTAT
		JORDAN
		LIPSHUTZ
		MOORE
		POWELL
		WATSON

	ENROLLED BILL
	AGENCY REPORT
	CAB DECISION
	EXECUTIVE ORDER

Comments due to Carp/Huron within 48 hours; due to Staff Secretary next day

	FOR STAFFING
	FOR INFORMATION
X	FROM PRESIDENT'S OUTBOX
	LOG IN/TO PRESIDENT TODAY
	IMMEDIATE TURNAROUND

		ARAGON
		BOURNE
		BRZEZINSKI
		BUTLER
		CARP
		H. CARTER
		CLOUGH
	X	FALLOWS
		FIRST LADY
		GAMMILL
		HARDEN
		HOYT
		HUTCHESON
		JAGODA
		KING

		KRAFT
		LANCE
		LINDER
		MITCHELL
		POSTON
		PRESS
		B. RAINWATER
		SCHLESINGER
		SCHNEIDERS
		SCHULTZE
		SIEGEL
		SMITH
		STRAUSS
		WELLS
		VOORDE

Fellows -
Save for later
use -
J

THE PRESIDENT HAS SEEN

All of us know well That
" To every Thing There is a
season And a Time to every
purpose under The heaven -

A Time to break down - A
Time to build up.

A Time to Keep Silence - A
Time to speak

A Time to weep, & A Time
to laugh -

Now is The Time for us to
make a decision - A decision
Not just about energy, but
a decision about The future of
our Country -

A decision to inventory The
Resources we have - water -
physical - human etc.

This A decision to establish
" Goals for America " Once Again is
a Time, for A sense of purpose
& mission for The American
people -

Mr. President:

You can express these thoughts better than I, but I truly believe there NOW exists the time for this sort of message -

Jack

/

Fallows -
Save for later
use -
J

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Mr. President:

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Ted

THE WHITE HOUSE
WASHINGTON

4/20/77

To Bert Lance

It's your anniversary too, & you've made the President & Country proud.

We decided to restrict the speech just to energy because of time pressures. I'm saving your suggestion for later use when "Goals for America" is launched.

Jimmy

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WASHINGTON

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Jimmy

BERT LANCE

C

4-20-77

Mr. President:

Happy Anniversary of the first 3 months. You have done a super job & our Country is in good hands. I become more proud of you every day.

Hope my speech thoughts weren't "hokey".

Want you to know there will be one very proud person in the audience today.